

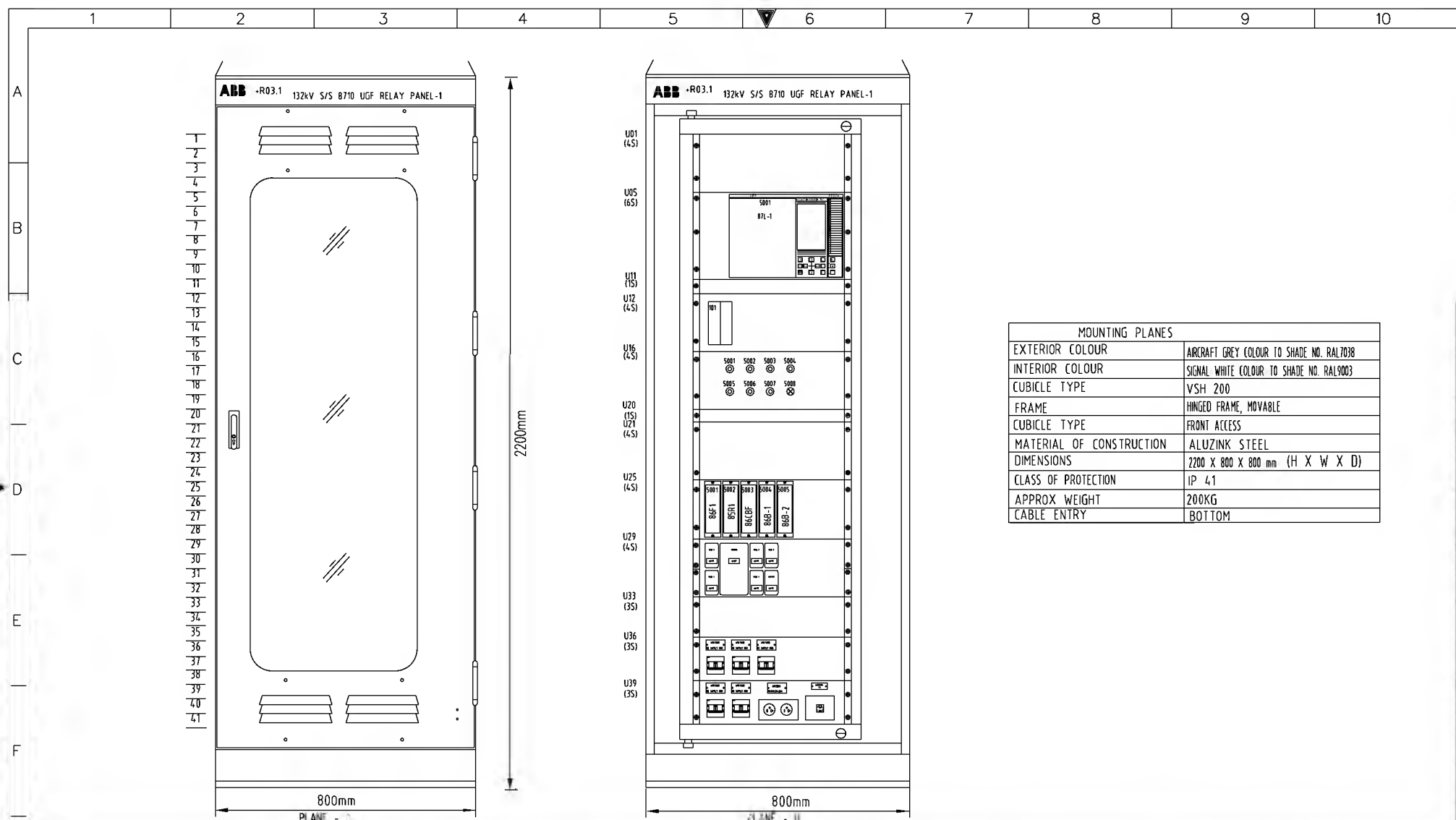


POWER SYSTEMS NETWORK MANAGEMENT  
PROTECTION AND SUBSTATION AUTOMATION SYSTEMS  
WBS NO: S-13656

ABB  
414,  
SECON  
RIYAD

CONTRACTOR : ABB Contracting Company  
CLIENT : National Grid sa  
PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-K  
SUBSTATION : S/S 8709  
CONTRACT NO. : 11131113/00  
TITLE : Assembly Drawing - +R03.1 [Under Ground Feeder]

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	COVER SHEET	نقل الكهرباء	
			DRAWN BY RIZ	CHECKED BY KVR	132kV UGF-8710 RELAY PANEL-1 +R03.1	INDEX	PLANT NO.
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED	S/S 8709-132/13.8KV IN AL-KHARJ CITY	-	C421
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC	RIYADH SAUDI ARABIA		

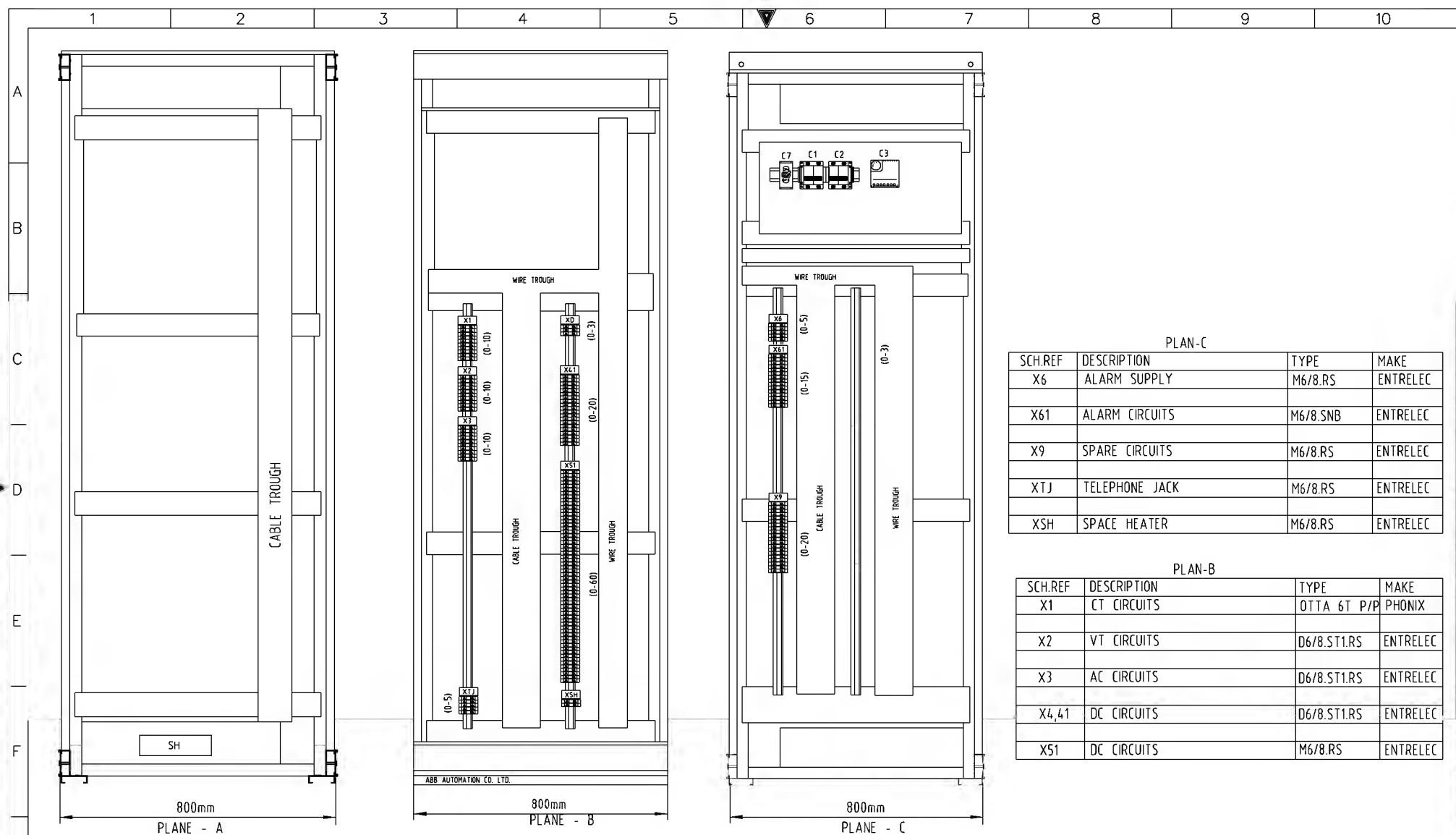


MOUNTING PLANES	
EXTERIOR COLOUR	AIRCRAFT GREY COLOUR TO SHADE NO. RAL7038
INTERIOR COLOUR	SIGNAL WHITE COLOUR TO SHADE NO. RAL9003
CUBICLE TYPE	VSH 200
FRAME	HINGED FRAME, MOVABLE
CUBICLE TYPE	FRONT ACCESS
MATERIAL OF CONSTRUCTION	ALUZINK STEEL
DIMENSIONS	2200 X 800 X 800 mm (H X W X D)
CLASS OF PROTECTION	IP 41
APPROX. WEIGHT	200KG
CABLE ENTRY	BOTTOM

AS-BUILT BY _____ DATE _____		CONTRACT NO. I1131113/00	JOB ORDER NO. S-13656	ASSEMBLY DRAWING		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
		DRAWN BY RIZ CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-1 +R03.1		National Grid sa			
		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
00		FOR APPROVAL		RIYADH SAUDI ARABIA		-	C421	CD-322917	SHT   CONT.
REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC			00	

NG/D2-0 (2012/01)  
DMS VECTOR NGD200

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



PLAN-C			
SCH.REF	DESCRIPTION	TYPE	MAKE
X6	ALARM SUPPLY	M6/8.RS	ENTRELEC
X61	ALARM CIRCUITS	M6/8.SNB	ENTRELEC
X9	SPARE CIRCUITS	M6/8.RS	ENTRELEC
XTJ	TELEPHONE JACK	M6/8.RS	ENTRELEC
XSH	SPACE HEATER	M6/8.RS	ENTRELEC

PLAN-B			
SCH.REF	DESCRIPTION	TYPE	MAKE
X1	CT CIRCUITS	OTTA 6T P/P	PHONIX
X2	VT CIRCUITS	D6/8.ST1.RS	ENTRELEC
X3	AC CIRCUITS	D6/8.ST1.RS	ENTRELEC
X4,41	DC CIRCUITS	D6/8.ST1.RS	ENTRELEC
X51	DC CIRCUITS	M6/8.RS	ENTRELEC

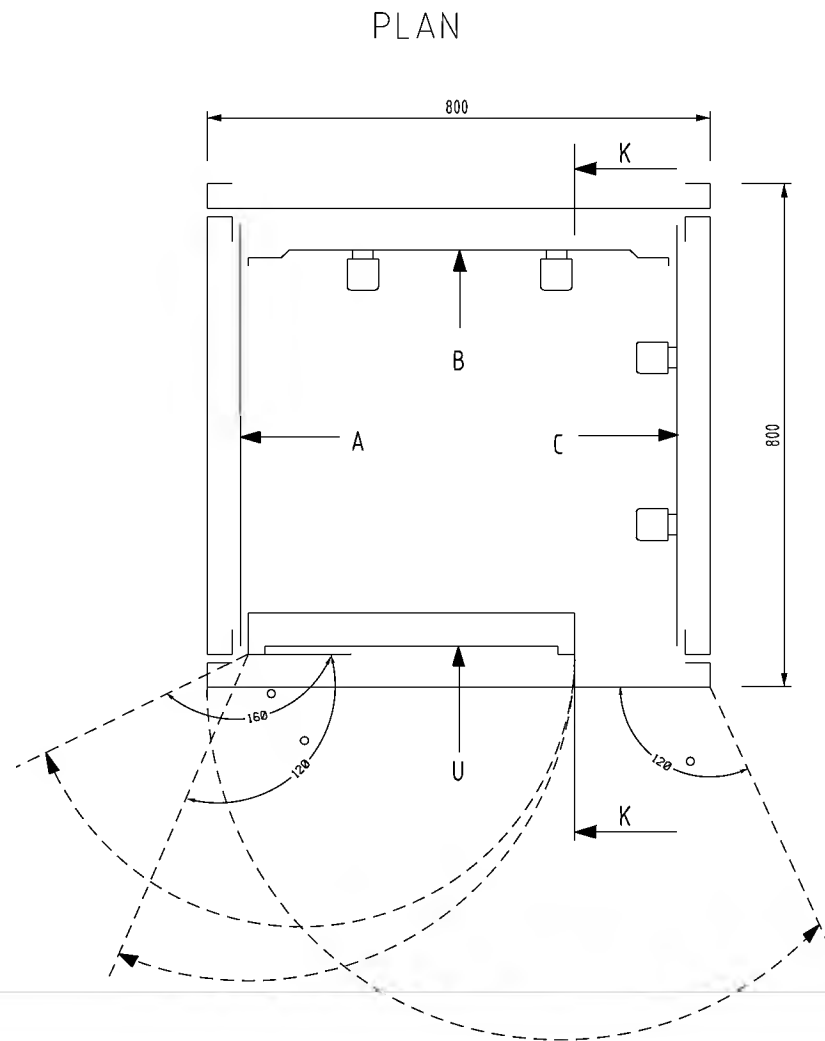
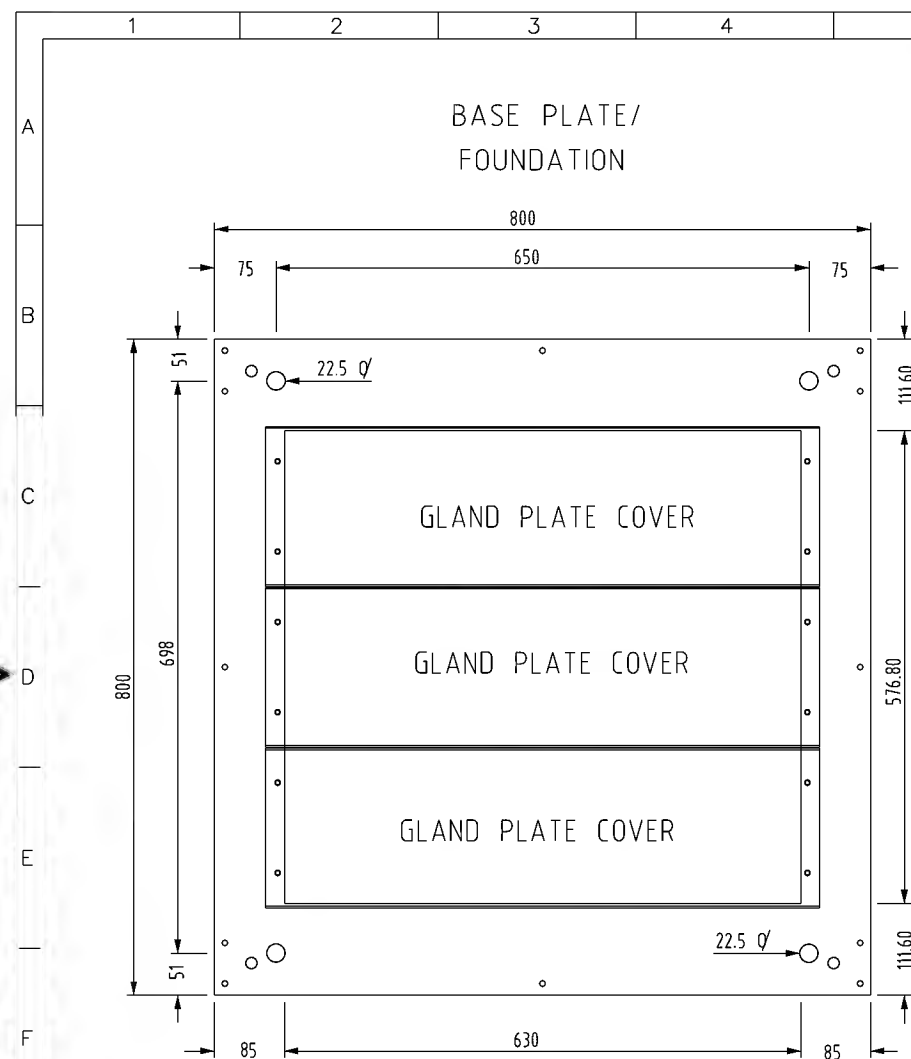
G

AS-BUILT BY _____		DATE _____	CONTRACT NO. I1131113/00	JOB ORDER NO. S-13656
DRAWN BY _____		CHECKED BY KVR		
DATE STARTED 24.01.2013		DATE COMPLETED _____		
PRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		
REV. NO.	DATE	DESCRIPTION		
00	13 04	FOR APPROVAL		

ASSEMBLY DRAWING  
132kV UGF-8710 RELAY PANEL-1 +R03.1  
S/S 8709-132/13.8KV IN AL-KHARJ CITY  
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء National Grid sa				
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322917	G02/G03	00

NG/D2-0 (2012/01)  
DMS VECTOR NGD200



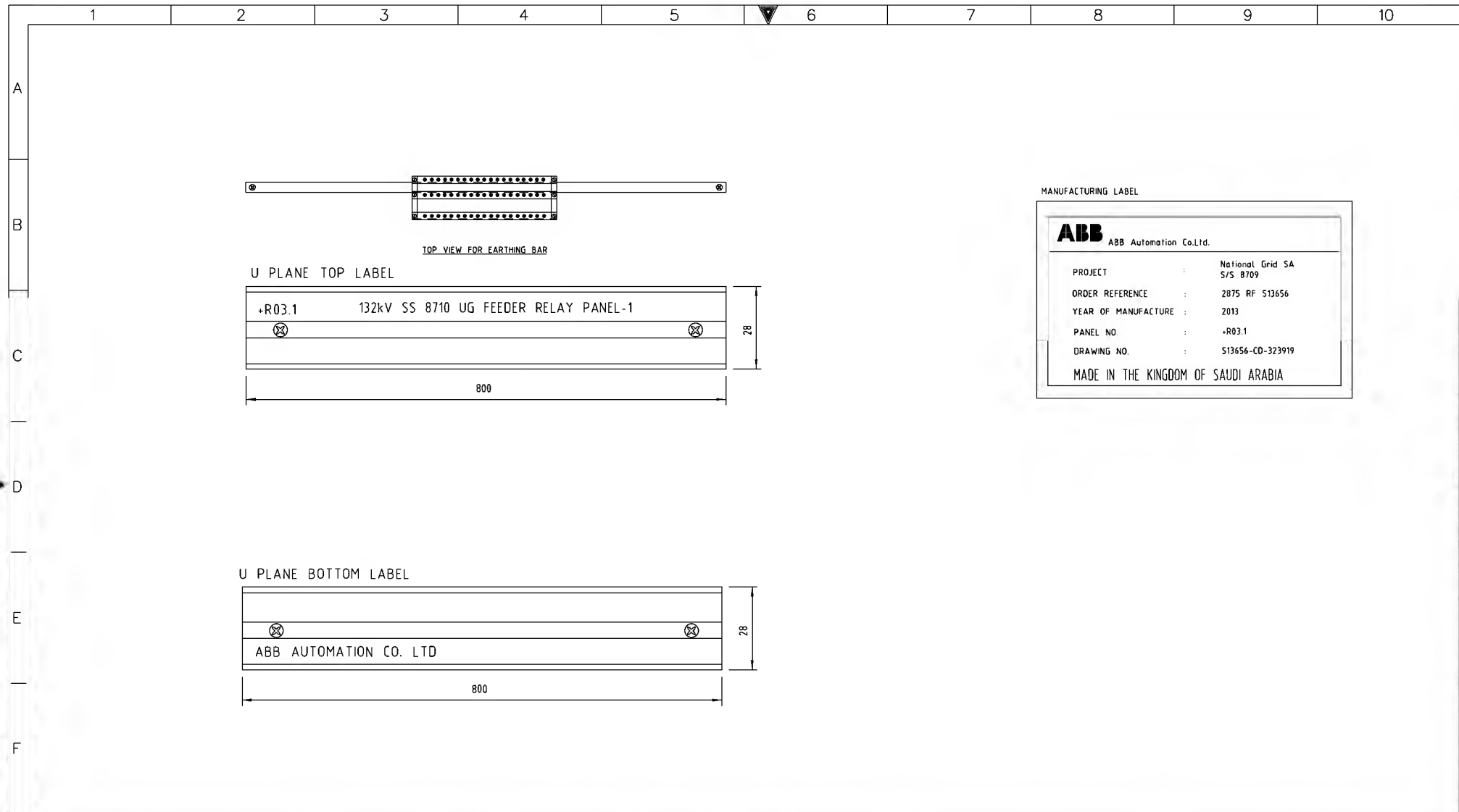
AS-BUILT BY _____		DATE _____	CONTRACT NO. I113I113/00	JOB ORDER NO. S-13656
DRAWN BY RIZ		CHECKED BY KVR		
DATE STARTED 24.01.2013		DATE COMPLETED _____		
PRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		
REV. NO.	DATE	DESCRIPTION		
00	13 04	FOR APPROVAL		

ASSEMBLY DRAWING	
132kV UGF-8710 RELAY PANEL-1 +R03.1	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH SAUDI ARABIA	

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
National Grid sa		National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
-	C421	CD-322917	G03/G04
		REV. NO.	
		00	

NG/D2-0 (2012/01)  
DMS VECTOR NGD200

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



# MANUFACTURING LABEL

<b>ABB</b> ABB Automation Co.Ltd.	
PROJECT :	National Grid SA S/S 8709
ORDER REFERENCE :	2875 RF S13656
YEAR OF MANUFACTURE :	2013
PANEL NO. :	+R03.1
DRAWING NO. :	S13656-CD-323919
MADE IN THE KINGDOM OF SAUDI ARABIA	

AS-BUILT BY _____ DATE _____		CONTRACT NO. I113I113/00	JOB ORDER NO. S-13656	ASSEMBLY DRAWING		الشركة الوطنية لنقل الكهرباء			
		DRAWN BY RIZ CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-1 +R03.1		National Grid sa			
		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
00 13 04		FOR APPROVAL		RIYADH SAUDI ARABIA		-	C421	CD-322917	SHT   CONT.
REV. NO.	DATE	DESCRIPTION		OPRG. DEPT.	ENG. DEPT.	G04   L00		00	
				CTPD	AUT-PSAC				



POWER SYSTEMS NETWORK MANAGEMENT  
PROTECTION AND SUBSTATION AUTOMATION SYSTEMS  
WBS NO: S-13656

ABB AUTOMATION COMPANY LTD.,  
414, AL-KHARJ ROAD  
SECOND INDUSTRIAL CITY  
RIYADH-11383 K.S.A

CONTRACTOR : ABB Contracting Company  
CLIENT : National Grid sa  
PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY  
SUBSTATION : S/S 8709  
CONTRACT NO. : 11131113/00  
TITLE : LIST OF APPARATUS +R03.1 [Under Ground Feeder]

AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

00	13 04	FOR APPROVAL
REV. NO.	DATE	DESCRIPTION

DRAWN BY RIZ CHECKED BY KVR  
DATE STARTED 24.01.2013 DATE COMPLETED \_\_\_\_\_  
OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

#### COVER SHEET

132kV UGF-8710 RELAY PANEL-1 +R03.1  
S/S 8709-132/13.8KV IN AL-KHARJ CITY  
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



نقل الكهرباء  
National Grid sa

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322917	SHT 1 OF 1	00

NG/D2-0 (2012/01)

DMS

VECTOR

NGD200

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

	1	2	3	4	5	6	7	8	9	10	
A	SR. NO.	GA. REF.	SCH. REF.	D E S C R I P T I O N		SHT.	QTY.	TYPE	MAKE	ORDERING INFORMATION	COUNTRY OF ORIGIN
				RELAY CUBICLE- +R03.1 ACCOMODATING THE FOLLOWING			1	VSH 200	ABB		
	1	U05.5001	87L-1	NUMERICAL DIFF PROTECTION TERMINAL WITH THE FOLLOWING		298	1	RED 670	ABB	1MRK 004 810-DC	SWEDEN
				FEATURES :		298A					
				ANALOG MODULE(6I+6U)		299					
				RATED POWER SUPPLY MODULE : (90-250V)DC							
				BINARY I/P MODULE -1NO							
				BINARY O/P MODULE-1NO							
B				OPTICAL ETHERNET MODULE IEC 61850-8-1/100 BASE FX CHANNEL GLASS							
				MEDIUM GRAPHIC HMI,15 CONTROLLABLE OBJECTS,1X 19"							
	2	U12.101	TS-1	TEST SWITCH FOR RED 670 RELAY		224	1	RTXP24	ABB	RK 926 315-AC	
C	3	U16.5001	S86F1	PUSH BUTTON FOR 86CBF & 86F1 TRIP RELAY RESET PB		232	2	MP1-10B	ABB	1SFA 611 100 R1006	SWEDEN
		U16.5002	S86CBF	BUTTON COLOUR : BLACK				MCBH-20		1SFA 611 605 R1102	
				CONTACT DATA : 1NO+1NC							
	4	U16.5003	S86B-1	PUSH BUTTON FOR 86B & LT TRIP RELAY RESET PB		232	3	MP1-10B	ABB	1SFA 611 100 R1006	SWEDEN
		U16.5004	S86B-2	BUTTON COLOUR : BLACK				MCBH-20		1SFA 611 605 R1102	
		U16.5005	LT	CONTACT DATA : 1NO+1NC							
D	5	U16.5006	S01	PUSH BUTTON FOR PROTECTION IN		232	1	MP1-10B	ABB	1SFA 611 100 R1006	SWEDEN
				BUTTON COLOUR : BLACK				MCBH-20		1SFA 611 605 R1102	
				CONTACT DATA : 1NO+1NC							
	6	U16.5007	S02	PUSH BUTTON FOR PROTECTION OUT		232	1	MP1-10B	ABB	1SFA 611 100 R1006	SWEDEN
				BUTTON COLOUR : BLACK				MCBH-20		1SFA 611 605 R1102	
				CONTACT DATA : 1NO+1NC							
E	7	U16.5008	L01	INDICATION LAMP FOR FPFM OUT		277	1	MC1-10010	ABB	1SFA 611 400 R1003	
				LENS : WHITE				MCBH-003		1SFA 611 605 R1400	SWEDEN
				LED RATING : 110-130V,4-6MA				KA2-2145		1SFA 616 921 R2145	
				HOLDER RATING : 130V WITH RESISTORS DIODEBLOCK							
F											

AS-BUILT BY _____		DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS			
				DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-1 +R03.1			
				DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY			
				OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA			

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.	
-	C421	CD-322917	L01	L02	00

	1	2	3	4	5	6	7	8	9	10
	SR. NO.	GA. REF.	SCH. REF.	DESCRIPTION	SHT.	QTY.	TYPE	MAKE	ORDERING INFORMATION	COUNTRY OF ORIGIN
A	8	U25.5001	86F1	HIGH BURDEN TYPE HAND/ELECTRICAL RESET TRIP RELAY AUXILIARY VOLTAGE : 110 - 125V DC OUTPUT CONTACTS : 8NO+2NC OPERATION INDICATOR : HAND RESET FLAG	232	1	MVAJ105	ALSTOM	MVAJ105RA0802A	UK
B	9	U25.5002	85R1	HIGH BURDEN TYPE SELF RESET TRIP RELAY AUXILIARY VOLTAGE : 110 - 125V DC OUTPUT CONTACTS : 10 NO OPERATION INDICATOR : SELF RESET FLAG	233	1	MVAJ101	ALSTOM	MVAJ101RA0800B	UK
C	10	U25.5003	86CBF	HIGH BURDEN TYPE HAND/ELECTRICAL RESET TRIP RELAY AUXILIARY VOLTAGE : 110 - 125V DC OUTPUT CONTACTS : 8NO+2NC OPERATION INDICATOR : HAND RESET FLAG	276	1	MVAJ105	ALSTOM	MVAJ105RA0802A	UK
	11	U25.5004	86B-1	HIGH BURDEN TYPE HAND/ELECTRICAL RESET TRIP RELAY AUXILIARY VOLTAGE : 110 - 125V DC OUTPUT CONTACTS : 8NO+2NC OPERATION INDICATOR : HAND RESET FLAG	276	1	MVAJ105	ALSTOM	MVAJ105RA0802A	UK
D	12	U25.5005	86B-2	HIGH BURDEN TYPE HAND/ELECTRICAL RESET TRIP RELAY AUXILIARY VOLTAGE : 110 - 125V DC OUTPUT CONTACTS : 8NO+2NC OPERATION INDICATOR : HAND RESET FLAG	277	1	MVAJ105	ALSTOM	MVAJ105RA0802A	UK
E										
F										


AS-BUILT BY		DATE	CONTRACT NO. I1131113/00	JOB ORDER NO. S-13656	LIST OF APPARATUS		الشركة الوطنية لنقل الكهرباء National Grid SA	
DRAWN BY RIZ		CHECKED BY KVR	132kV UGF-8710 RELAY PANEL-1 +R03.1		INDEX		PLANT NO.	DRAWING NUMBER
DATE STARTED 24.01.2013		DATE COMPLETED	S/S 8709-132/13.8KV IN AL-KHARJ CITY		-		C421	CD-322917
PRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC	RIYADH SAUDI ARABIA		SHEET NO.		SHT (CONT.)	REV. NO.
00		13 04	FOR APPROVAL		L02		L03	00
REV. NO.		DATE	DESCRIPTION		NG/D2-0 (2012/01)		DMS VECTOR NGD200	

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.





	1	2	3	4	5	6	7	8	9	10
	SR. NO.	GA REF.	SCH. REF.	D E S C R I P T I O N	SHEET NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION	COUNTRY OF ORIGIN
A	17			MCB 2 POLE 6A FOR DC SUPPLY WITH 2NC AUXILIARY CONTACT	216	5	S282UC-K6 S2-H02	ABB	GH S282 0164 R0317 GH S270 1916 R0003	GERMANY
		U39.5001	Q1	R1+ SUPPLY						
		U39.5002	Q2	I11+ SUPPLY						
		U36.5001	Q3	RS+ SUPPLY						
		U36.5002	Q4	IS+ SUPPLY						
		U36.5003	Q5	TC1+ SUPPLY						
B	18	U39.5003	C01	CONVENIENCE OUTLET 10A, 127V AC	211	1	USM45 & USMS45	LEGRAND	74140 & 74180	FRANCE
			C02	CONVENIENCE OUTLET 10A, 220V AC						
	19		C1,C2	MINIATURE CIRCUIT BREAKER, 2 POLE, 10A FOR CONVENIENCE OUTLET WITH AUXILIARY SWITCH, 1NO + 1NC CONTACTS	211	2	S202-K10 S2C-H11L	ABB	2CDS 252 001 R0427 2CDS 270 1917 R0001	SWEDEN
C	20		C3	THERMOSTAT FOR SPACE HEATER, 5-60 °C	211	1	SK 3110	RITTAL	SK 3110	
	21	U39.5004	TJ	TELEPHONE JACK 1GANG 4WIRE	211	1	EDF410	EDISON	EDF410	THIWAN
	22		C7	ON/OFF SWITCH FOR SPACE HEATER	211	1	M2SS1-10B MCBH-10	ABB	1SFA 611 200 R1006 1SFA 611 605 R1101	SWEDEN
	23		DS	DOOR SWITCH FOR CONTROL OF CUBICLE INTERNAL ILLUMINATION LAMP	211	1	LS30P	ABB	1S8V 010213 R1202	SWEDEN
	24		IL	INTERNAL ILLUMINATION CUBICLE LAMP SUITABLE FOR 127V AC, 60Hz SUPPLY, 20W	211	1	T-4	SUNON	SP-20W	
	25		SH	SPACE HEATER, 150W, 120V, 60Hz	211	1	RICA	GRUPPO	1FZEK 006 C001	ITALY
D										
E										
F										

AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	LIST OF APPARATUS		الشركة الوطنية لنقل الكهرباء		 <b>نقل الكهرباء</b> National Grid SA	
		DRAWN BY RIZ CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-1 +R03.1		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY					SHT (CONT.)
		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		-	C421	CD-322917	L04/L05
REV. NO.	DATE	DESCRIPTION							
00	13 04	FOR APPROVAL							00



	1	2	3	4	5	6	7	8	9	10
A										
B										
C										
D										
E										
F										

LABEL REF.	LABEL ENGRAVING	MATERIALS	ENGRAVING	LABEL SIZE	LETTER SIZE
U05.5001	U05.5001 87L-1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U12.101	U12.101 T5-1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X15mm	4mm
U16.5001	U16.5001 S86F1	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U16.5002	U16.5002 S86CBF	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U16.5003	U16.5003 S86B-1	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U16.5004	U16.5004 S86B-2	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	3mm
U16.5005	U16.5005 LT	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm
U16.5006	U16.5006 S01	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U16.5007	U16.5007 S02	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm
U16.5008	U16.5008 L01	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm
U25.5001	U25.5001 B6F1	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U25.5002	U25.5002 B5R1	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U25.5003	U25.5003 B6CBF	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U25.5004	U25.5004 B6B-1	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U25.5005	U25.5005 B6B-2	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U29.101	U29.101 74R1/74IT1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.301	U29.301 74R5/74I5	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.107	U29.107 K01M	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.119	U29.307 TMR/B6BFI	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.319	U29.319 TMR/B6B-1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.125	U29.125 TMR/B6B-2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.325	U29.325 R1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.131	U29.131 R2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm

AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	LIST OF APPARATUS		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء National Grid sa	
		DRAWN BY RIZ CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-1 +R03.1		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		-	C421	CD-322917	SHT (CONT.)
		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA				L06/L07	00
REV. NO.	DATE	DESCRIPTION							
00	13 04	FOR APPROVAL							

	1	2	3	4	5	6	7	8	9	10
A										
B										
C										
D										
E										
F										
G										

AS-BUILT BY _____ DATE _____		CONTRACT NO. I113I113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS		الشركة الوطنية لنقل الكهرباء National Grid sa	
		DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-1 +R03.1		SHEET NO.	
		DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		SHT  CONT.	
REV. NO.		DATE		DESCRIPTION		PRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		REV. NO.	
00		13 04		FOR APPROVAL		RIYADH SAUDI ARABIA		00	

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322917	L07 NIL	00

NG/D2-0 (2012/01)  
DMS VECTOR NGD200

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

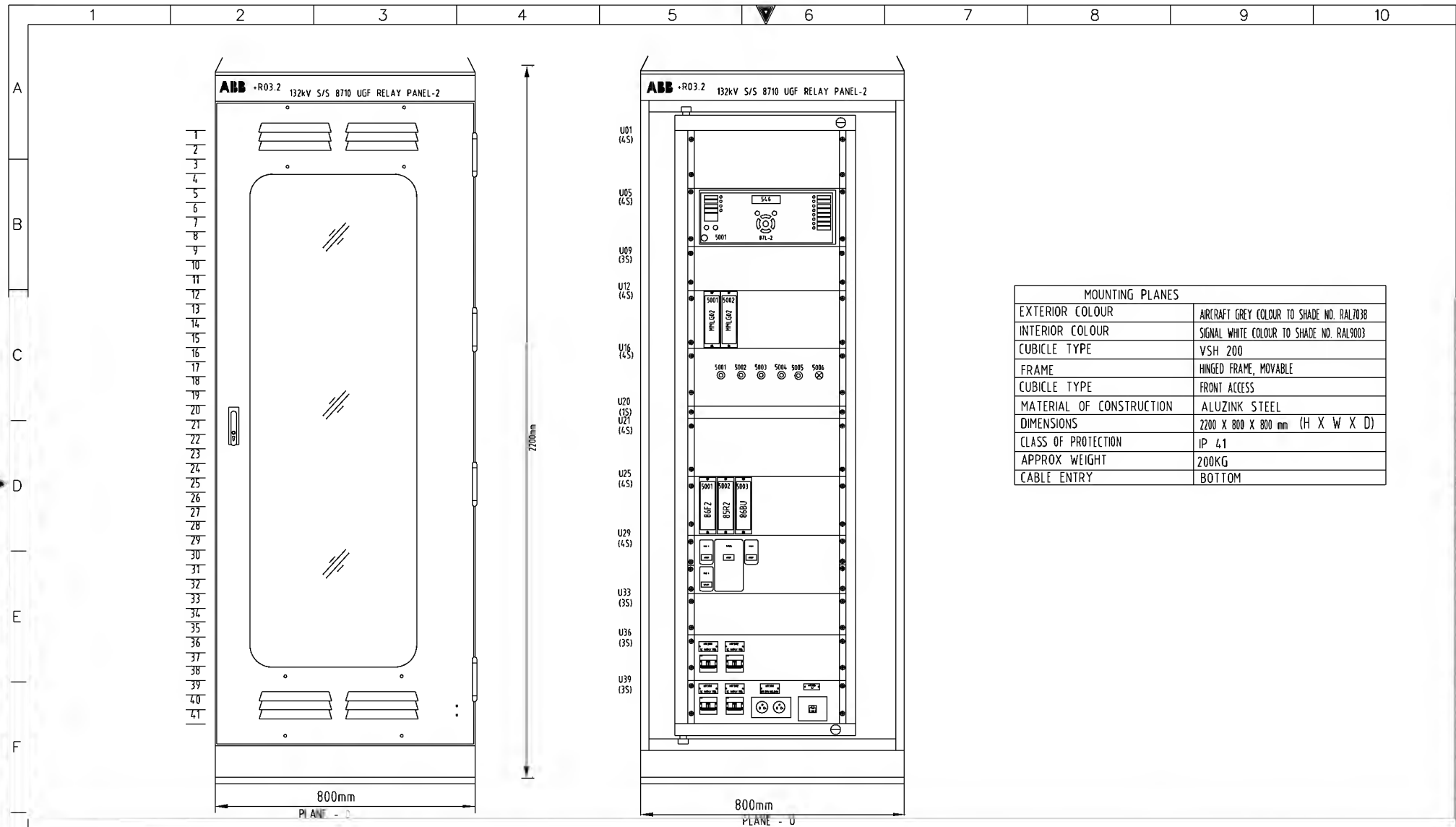


POWER SYSTEMS NETWORK MANAGEMENT  
PROTECTION AND SUBSTATION AUTOMATION SYSTEMS  
WBS NO: S-13656

ABB AUTOMATION COMPANY LTD.,  
414, AL-KHARJ ROAD  
SECOND INDUSTRIAL CITY  
RIYADH-11383 K.S.A

CONTRACTOR : ABB Contracting Company  
CLIENT : National Grid SA  
PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY  
SUBSTATION : S/S 8709  
CONTRACT NO. : 11131113/00  
TITLE : Assembly Drawing +R03.2 [Under Ground Feeder]

AS-BUILT BY _____		DATE _____	CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	COVER SHEET		الشركة الوطنية لنقل الكهرباء National Grid SA			
DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-2 +R03.2		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		-	C421	CD-322918	SHT   CONT.	00
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC	RIYADH	SAUDI ARABIA		NG/D2-0 (2012/01)		
00		13 04	FOR APPROVAL				DMS		VECTOR	NGD200

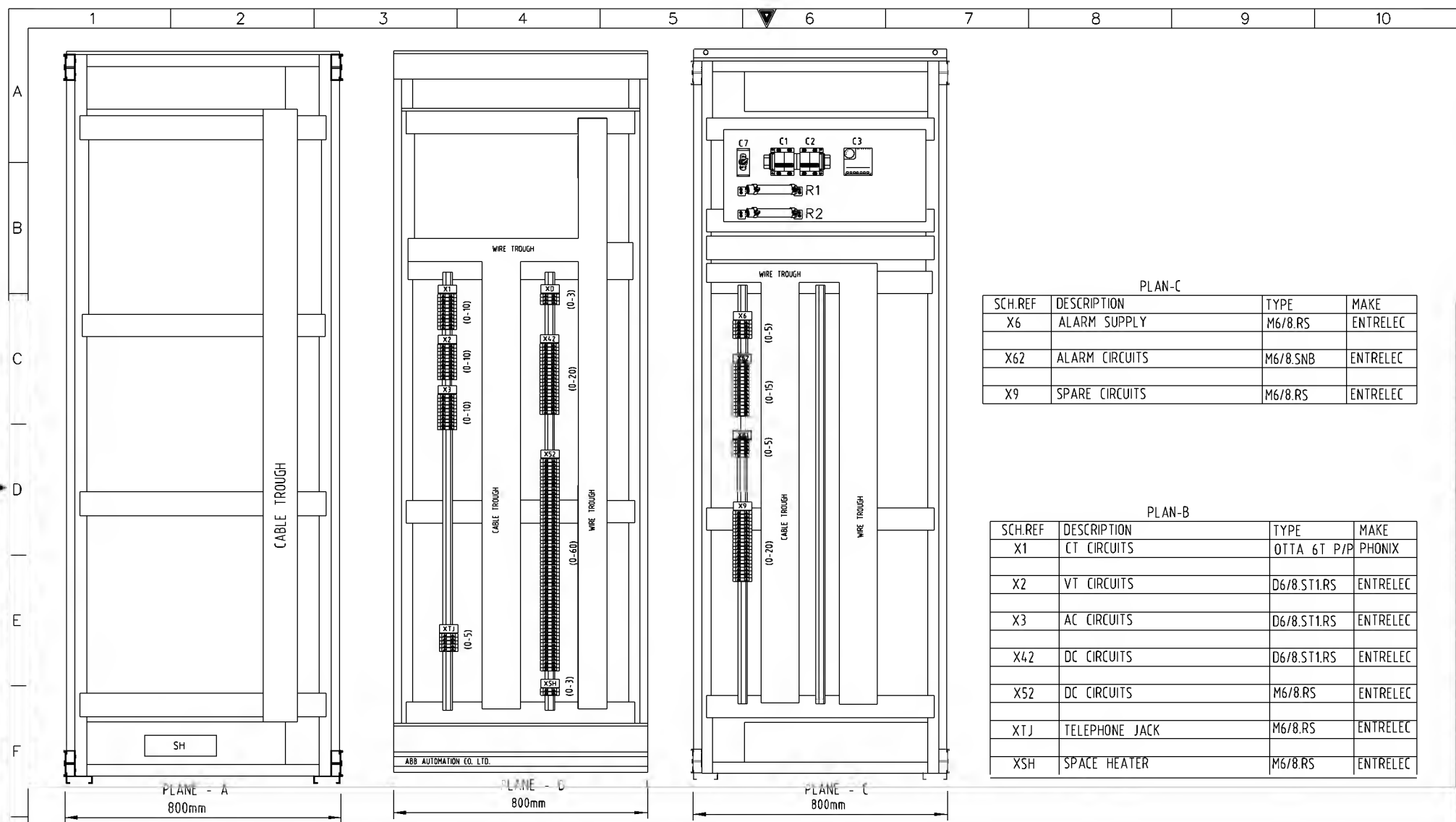


MOUNTING PLANES	
EXTERIOR COLOUR	AIRCRAFT GREY COLOUR TO SHADE NO. RAL7038
INTERIOR COLOUR	SIGNAL WHITE COLOUR TO SHADE NO. RAL9003
CUBICLE TYPE	VSH 200
FRAME	HINGED FRAME, MOVABLE
CUBICLE TYPE	FRONT ACCESS
MATERIAL OF CONSTRUCTION	ALUZINK STEEL
DIMENSIONS	2200 X 800 X 800 mm (H X W X D)
CLASS OF PROTECTION	IP 41
APPROX. WEIGHT	200KG
CABLE ENTRY	BOTTOM

AS-BUILT BY _____ DATE _____		CONTRACT NO. I1131113/00	JOB ORDER NO. S-13656	ASSEMBLY DRAWING		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
DRAWN BY RIZ CHECKED BY KVR		DATE STARTED 24.01.2013 DATE COMPLETED _____		132kV UGF-8710 RELAY PANEL-2 +R03.2		National Grid sa		SHEET NO. SHT (CONT.)	
FOR APPROVAL		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		S/S 8709-132/13.8KV IN AL-KHARJ CITY		DRAWING NUMBER		REV. NO.	
REV. NO.	DATE	DESCRIPTION		RIYADH SAUDI ARABIA		INDEX	PLANT NO.	SHEET NO.	
00	13 04					-	C421	CD-322918	
								001 002	

NG/D2-0 (2012/01)  
DMS VECTOR NGD200

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



SCH.REF	DESCRIPTION	TYPE	MAKE
X6	ALARM SUPPLY	M6/8.RS	ENTRELEC
X62	ALARM CIRCUITS	M6/8.SNB	ENTRELEC
X9	SPARE CIRCUITS	M6/8.RS	ENTRELEC

SCH.REF	DESCRIPTION	TYPE	MAKE
X1	CT CIRCUITS	OTTA 6T P/P	PHONIX
X2	VT CIRCUITS	D6/8.ST1.RS	ENTRELEC
X3	AC CIRCUITS	D6/8.ST1.RS	ENTRELEC
X42	DC CIRCUITS	D6/8.ST1.RS	ENTRELEC
X52	DC CIRCUITS	M6/8.RS	ENTRELEC
XTJ	TELEPHONE JACK	M6/8.RS	ENTRELEC
XSH	SPACE HEATER	M6/8.RS	ENTRELEC

AS-BUILT BY _____ DATE _____		CONTRACT NO. 1113113/00	JOB ORDER NO. S-13656	ASSEMBLY DRAWING		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
DRAWN BY RIZ CHECKED BY KVR		DATE STARTED 24.01.2013 DATE COMPLETED _____		132kV UGF-8710 RELAY PANEL-2 +R03.2		INDEX		SHEET NO.	
DATE STARTED 24.01.2013 DATE COMPLETED _____		PRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		S/S 8709-132/13.8KV IN AL-KHARJ CITY		PLANT NO.		DRAWING NUMBER	
FOR APPROVAL		PRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		- C421		CD-322918	
REV. NO.	DATE	DESCRIPTION		SHEET NO.		SHT (CONT.)		REV. NO.	
00	13 04								

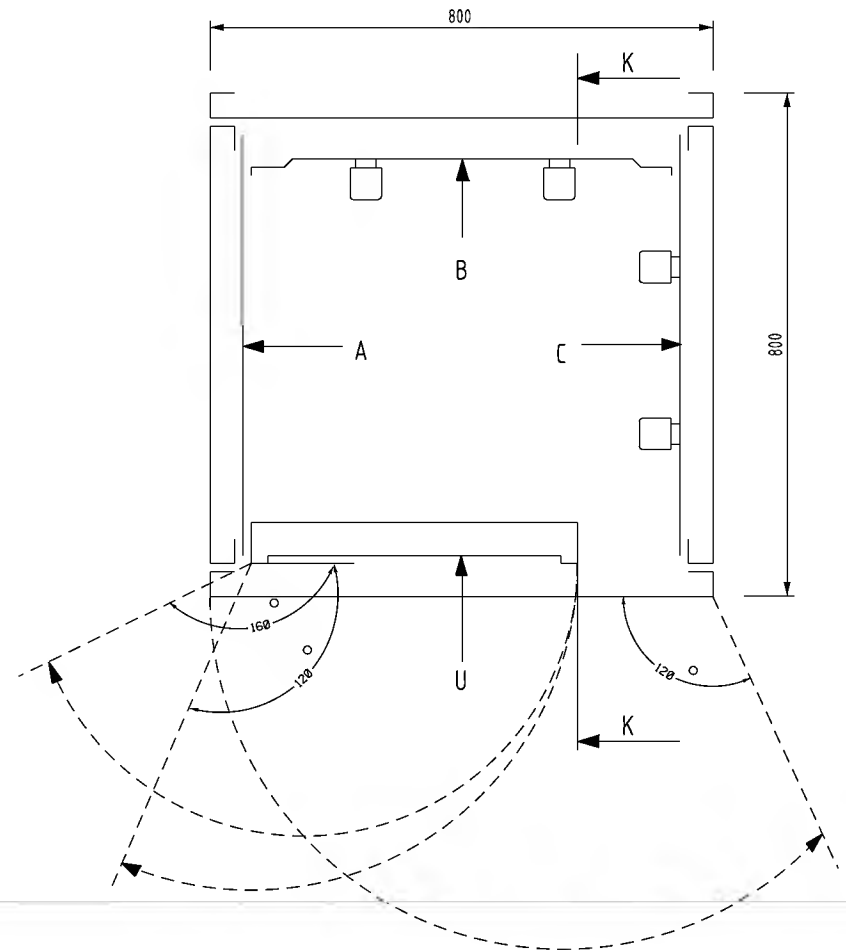
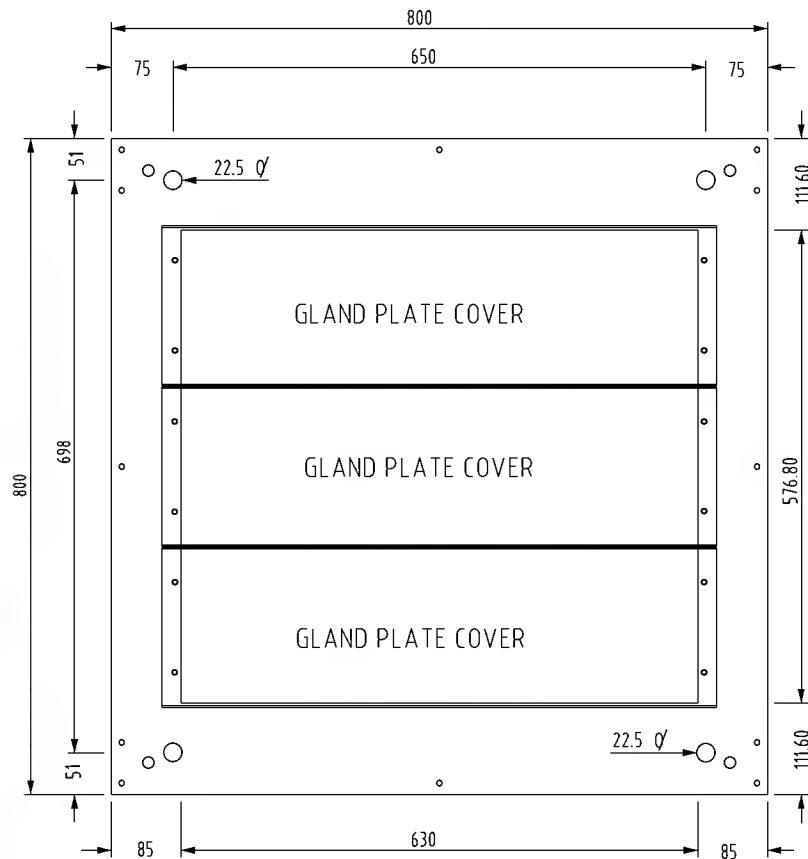
NG/D2-D (2012/01)  
DMS VECTOR NGD200

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



BASE PLATE/  
FOUNDATION

PLAN



AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. I1131113/00 JOB ORDER NO. S-13656

DRAWN BY RIZ CHECKED BY KVR  
DATE STARTED 24.01.2013 DATE COMPLETED \_\_\_\_\_  
PRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

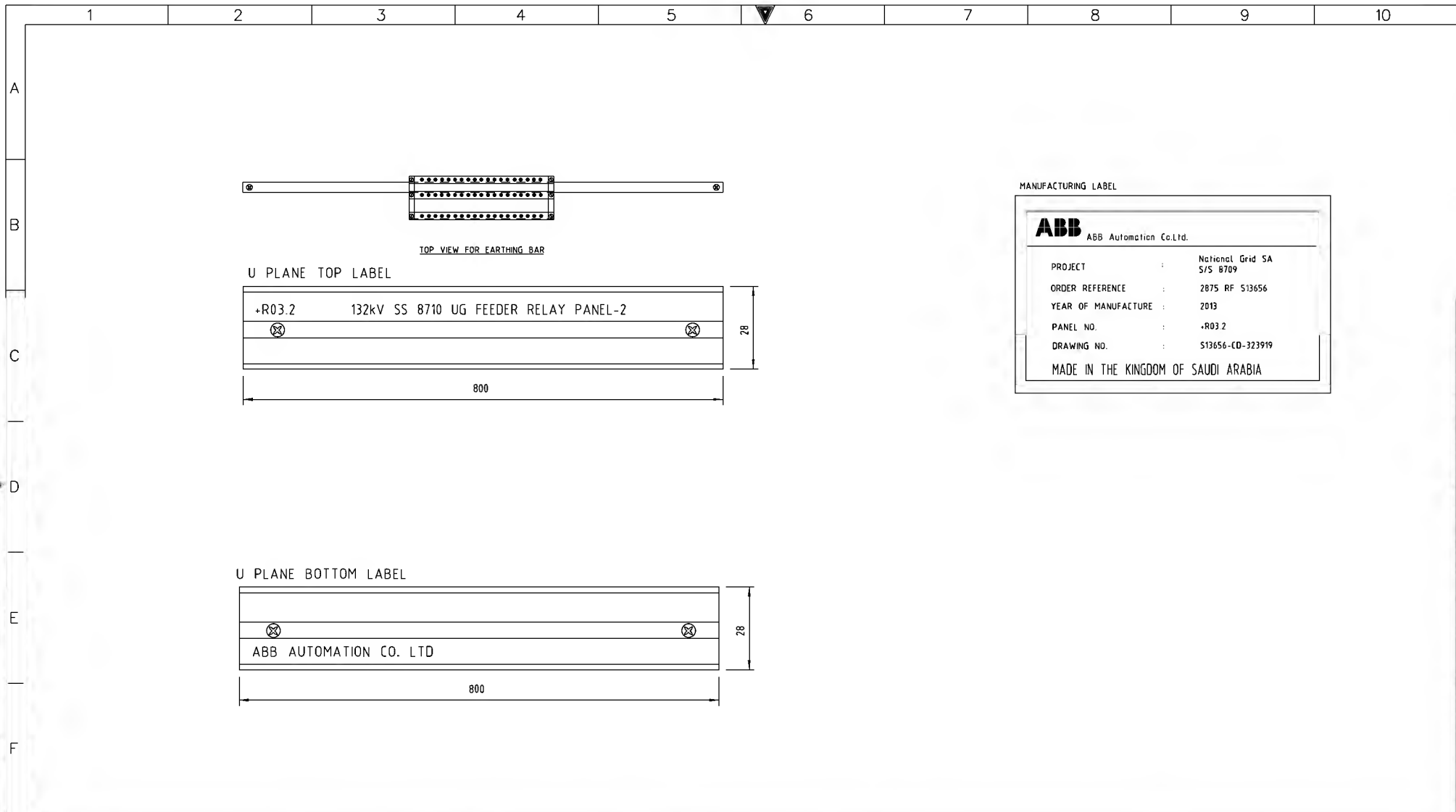
ASSEMBLY DRAWING  
132kV UGF-8710 RELAY PANEL-2 +R03.2  
S/S 8709-132/13.8KV IN AL-KHARJ CITY  
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء  
National Grid sa

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322918	G03/G04	00

NG/D2-0 (2012/01)  
DMS VECTOR NGD200

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid sa. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



AS-BUILT BY _____ DATE _____		CONTRACT NO. I1131113/00	JOB ORDER NO. S-13656	ASSEMBLY DRAWING		الشركة الوطنية لنقل الكهرباء			
		DRAWN BY RIZ CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-2 +R03.2		National Grid sa			
		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
00		FOR APPROVAL		RIYADH SAUDI ARABIA		-	C421	CD-322918	00
REV. NO.	DATE	DESCRIPTION		OPRG. DEPT.	ENG. DEPT.	NG/D2-0 (2012/01)			
				CTPD	AUT-PSAC	DMS VECTOR NGD200			



POWER SYSTEMS NETWORK MANAGEMENT  
PROTECTION AND SUBSTATION AUTOMATION SYSTEMS  
WBS NO: S-13656

ABB AUTOMATION COMPANY LTD.,  
414, AL-KHARJ ROAD  
SECOND INDUSTRIAL CITY  
RIYADH-11383 K.S.A

CONTRACTOR : ABB Contracting Company  
CLIENT : National Grid SA  
PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY  
SUBSTATION : S/S 8709  
CONTRACT NO. : 11131113/00  
TITLE : LIST OF APPARATUS +R03.2 [Under Ground Feeder]

AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

00	13 04	FOR APPROVAL	DRAWN BY RIZ CHECKED BY KVR
REV. NO.	DATE	DESCRIPTION	DATE STARTED 24.01.2013 DATE COMPLETED _____
			OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

#### COVER SHEET

132kV UGF-8710 RELAY PANEL-2 +R03.2  
S/S 8709-132/13.8KV IN AL-KHARJ CITY  
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



نقل الكهرباء  
National Grid SA

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322918	SHT 1 OF 1	00


NG/D2-0 (2012/01)

DMS

VECTOR

NGD200

	1	2	3	4	5	6	7	8	9	10
	SR. NO.	LOC. REF.	SCH. REF.	D E S C R I P T I O N	SHT	QTY.	TYPE	MAKE	ORD INFORMATION	COUNTRTY OF ORIGIN
A				RELAY CUBICLE- +R03.2 ACCOMODATING THE FOLLOWING		1				
	1	U05.5001	87L-2	NUMERICAL HIGH SPEED CURRENT DISTANCE PROTECTION VERSION : 1 & 3 POLE TRIPPING/RECLOSEING MHO/QUAD CHAR AUX : 110V-250V DC : 100-120V In/Vn : DUAL RATED CT (1/5A) HARDWARE : EHTHER NET (100mbits) PLUS irig-b modulated PRODUCT OPTION : CH1-1300nm SINGLE MOOE CH2-1300nm SINGLE MOOE PROTOCOL OPTION : IEC61850+COURIER VIA REAR RS485 PORT MOUNTING : 19" RACK,2A LOGICAL INPUTS,32 RELAY OUT PUTS LANGUAGE : ENGLISH SOFTWARE : 71	498	1	P546	ALSTOM	P546	UK
B										
C	2	U12.5001	TS-1	TEST SWITCH FOR PS46 RELAY	422	2	MMLG02	ALSTOM	MMLG02 R1AA 0001D	UK
		U12.5002	TS-2							
	3	U16.5001	S03	PUSH BUTTON FOR FPSM IN_SELECTION BUTTON COLOUR : BLACK CONTACT DATA : 2NO	432	1	MP1-10B MCBH-20	ABB	1SFA 611 100 R1006 1SFA 611 605 R1102	SWEDEN
D	4	U16.5002	S04	PUSH BUTTON FOR FPSM OUT SELECTION BUTTON COLOUR : BLACK CONTACT DATA : 2NO	432	1	MP1-10B MCBH-20	ABB	1SFA 611 100 R1006 1SFA 611 605 R1102	SWEDEN
	5	U16.5003	S86BU	PUSH BUTTON FOR 86BU RESET BUTTON COLOUR : BLACK CONTACT DATA : 2NO	443	1	MP1-10B MCBH-20	ABB	1SFA 611 100 R1006 1SFA 611 605 R1102	SWEDEN
E	6	U16.5004	S86F2	PUSH BUTTON FOR 86F2 RESET BUTTON COLOUR : BLACK CONTACT DATA : 2NO	432	1	MP1-10B MCBH-20	ABB	1SFA 611 100 R1006 1SFA 611 605 R1102	SWEDEN
	7	U16.5005	LT	PUSH BUTTON FOR 86F2 RESET BUTTON COLOUR : BLACK CONTACT DATA : 2NO	431	1	MP1-10B MCBH-20	ABB	1SFA 611 100 R1006 1SFA 611 605 R1102	SWEDEN
F	8	U16.5006	L01	INDICATION LAMP OUT LENS : WHITE LENS RATING : 110-130V,4-6MA HOLDER RATING :130V WITH RESISTORS DIODE BLOCK	431	1	MC1-100W MCBH-003 KA2-2145	ABB	1SFA 611 400 R1003 1SFA 611 605 R1400 1SFA 616 921 R2145	SWEDEN

AS-BUILT BY _____ DATE _____		CONTRACT NO. I113I113/00		JOB ORDER NO. S-13656		COVER SHEET		 <b>نقل الكهرباء</b> الشركة الوطنية لنقل الكهرباء National Grid SA	
		DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-2 +R03.2		INDEX PLANT NO. DRAWING NUMBER	
		DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		SHEET NO. SHT   CONT.	
00		13 04		FOR APPROVAL		RIYADH SAUDI ARABIA		L01   L02	
REV. NO.		DATE		DESCRIPTION				REV. NO.	
								00	

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.





A

B

C

D

E

F

G

1	2	3	4	5	6	7	8	9	10
SR. NO.	GA REF.	SCH. REF.	D E S C R I P T I O N	SHEET NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION	COUNTRY OF ORIGIN
15			MCB 2 POLE 6A, FOR DC SUPPLY WITH 2NC AUXILIARY CONTACT	416	2	S 282 UC-K6 S2-H02	ABB	GH S282 0164 R0377 GH S270 1916 R0003	GERMANY
	U39.5001	01	Q1 R2+ SUPPLY						
	U39.5002	02	Q2 R3 + SUPPLY						
	U36.5001	03	Q3 IT2+ SUPPLY						
	U36.5002	04	Q4 TC2 + SUPPLY						
16	U39.5003	C01 C02	CONVENIENCE OUTLET 10A, 127V AC CONVENIENCE OUTLET 10A, 220V AC	411	1	USM45 & USMS45	LEGRAND	74140 & 74180	FRANCE
		C1,C2	MINIATURE CIRCUIT BREAKER, 2 POLE, 10A FOR CONVENIENCE OUTLET WITH AUXILIARY SWITCH, 1NO + 1NC CONTACTS	411	2	S202-C10 S2C-H11L	ABB	2CDS 253 001 R0104 2CDS 200 936 R0001	GERMANY
17		C3	THERMOSTAT FOR SPACE HEATER, 5-60 °C	411	1	SK 3110	RITTAL	SK 3110	THIWAN
18	U39.5004	TJ	TELEPHONE JACK 1GANG 4WIRE	411	1	EDF410	EDISON	EDF410	SWEDEN
19		C7	ON/OFF SWITCH FOR SPACE HEATER	411	1	M2SS1-10B MCBH-10	ABB	1SFA 611 200 R1006 1SFA 611 605 R1101	
20		CS	DOOR SWITCH FOR CONTROL OF CUBICLE INTERNAL ILLUMINATION LAMP	411	1	LS30P	ABB	1SBV 010213 R1202	SWEDEN
21		IL	INTERNAL ILLUMINATION CUBICLE LAMP SUITABLE FOR 127V AC, 60Hz SUPPLY, 20W	411	1	T-4	SUNON	SP-20W	
22		SH	SPACE HEATER, 150W, 120V, 60Hz	411	1	MICA	GRUPPO	1FZEK 006 C001	ITALY
23		R1 R2	FIXED RESISTOR FOR TRIP CIRCUIT SUPERVISION CKT. 2.5Kohm,15W	491	2	GRF 30/200	DANOTHERM	GRF 30/200	GERMANY

AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

			DRAWN BY RIZ CHECKED BY KVR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013 DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

## LIST OF APPARATUS

132kV UGF-8710 RELAY PANEL-2 +R03.2  
S/S 8709-132/13.8KV IN AL-KHARJ CITY  
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



نقل الكهرباء  
National Grid SA

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322918	L04   L05	00


NG/D2-0 (2012/01)

DMS

VECTOR

NGD200

	1	2	3	4	5	6	7	8	9	10
A										
B										
C										
D										
E										
F										
G										

AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS		<div>الشركة الوطنية لنقل الكهرباء</div> <div> نقل الكهرباء National Grid sa</div>	
		DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-2 +R03.2		INDEX	PLANT NO.
00		13 04		DATE STARTED 24.01.2013		DATE COMPLETED _____		DRAWING NUMBER	
REV. NO.		DATE		DESCRIPTION		OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC	
						S/S 8709-132/13.8KV IN AL-KHARJ CITY		SHEET NO.	
						RIYADH		SAUDI ARABIA	
								CD-322918	
								L05   L06	
								REV. NO.	
								00	
								NG/D2-D (2012/01)	
								DMS	
								VECTOR	
								NG0200	

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



	1	2	3	4	5	6	7	8	9	10
A										
B										
C										
D										
E										
F										


LABEL REF.	LABEL ENGRAVING	MATERIALS	ENGRAVING	LABEL SIZE	LETTER SIZE
U05.5001	U05.5001 87L-2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U12.5001	U12.5001 TS-1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X15mm	4mm
U12.5002	U12.5002 TS-2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X15mm	4mm
U16.5001	U16.5001 S03	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U16.5002	U16.5002 S04	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U16.5003	U16.5003 586BU	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U16.5004	U16.5004 586F2	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	3mm
U16.5005	U16.5005 LT	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm
U16.5006	U16.5006 L01	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm
U25.5001	U25.5001 86F2	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm
U25.5002	U25.5002 85R2	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm
U25.5003	U25.5003 86BU	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm
U29.101	U29.101 74R2/74R3	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.107	U29.107 K01S	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.301	U29.301 TMR/86F2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.125	U29.125 74IT2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.119	U29.119 R1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.319	U29.319 R2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm

AS-BUILT BY _____ DATE _____		CONTRACT NO. I113I113/00	JOB ORDER NO. S-13656	LIST OF APPARATUS		نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid SA	
DRAWN BY RIZ CHECKED BY KVR		DATE STARTED 24.01.2013 DATE COMPLETED _____		132kV UGF-8710 RELAY PANEL-2 +R03.2		SHEET NO. 00	
OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		REV. NO. 00	
REV. NO. 00	DATE 13 04	DESCRIPTION FOR APPROVAL		RIYADH SAUDI ARABIA		INDEX - PLANT NO. C421 DRAWING NUMBER CD-322918 SHEET NO. 00 SHT. CONT. 07	

1 2 3 4 5 6 7 8 9 10

A  
B  
C  
D  
E  
F  
G

LABEL REF.	LABEL ENGRAVING	MATERIALS	ENGRAVING	LABEL SIZE	LETTER SIZE
C1	127V AC SUPPLY MCB	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
C2	220V AC SUPPLY MCB	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
C3	3 THERMOSTAT	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
C7	ON/OFF SWITCH	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
D5	DOOR SWITCH	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
IL	ILLUMINATION LAMP	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
SH	SPACE HEATER	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U39.5001	U39.5001 01	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U39.5002	U39.5002 02	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U39.5003	U39.5003 03/02	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U39.5004	U39.5004 04	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U36.5001	U36.5001 03	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U36.5002	U36.5002 04	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm

AS-BUILT BY _____ DATE _____		CONTRACT NO. I113I113/00	JOB ORDER NO. S-13656	LIST OF APPARATUS		الشركة الوطنية لنقل الكهرباء		 نقل الكهرباء National Grid SA		
		DRAWN BY RIZ CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-2 +R03.2		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY					SHT   CONT.	
00 13 04		FOR APPROVAL		RIYADH SAUDI ARABIA		-	C421	CD-322918	L07 NIL	00
REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC					

NG/D2-0 (2012/01)  
DMS VECTOR NGD200

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



POWER SYSTEMS NETWORK MANAGEMENT  
PROTECTION AND SUBSTATION AUTOMATION SYSTEMS  
WBS NO: S-13656

ABB AUTOMATION COMPANY LTD.,  
414, AL-KHARJ ROAD  
SECOND INDUSTRIAL CITY  
RIYADH-11383 K.S.A

CONTRACTOR : ABB Contracting Company  
CLIENT : National Grid sa  
PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY  
SUBSTATION : S/S 8709  
CONTRACT NO. : 11131113/00  
TITLE : SCHEMATICS DRAWINGS (Under Ground Feeder)

AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

00	13 04	FOR APPROVAL
REV. NO.	DATE	DESCRIPTION

DRAWN BY	RIZ	CHECKED BY	KVR
DATE STARTED	24.01.2013	DATE COMPLETED	
OPRG. DEPT.	CTPD	ENG. DEPT.	AUT-PSAC

#### COVER SHEET

132kV UGF-8710 RELAY PANEL-1/2  
S/S 8709-132/13.8KV IN AL-KHARJ CITY  
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



نقل الكهرباء  
National Grid sa

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322919	SHT 001	00

NG/D2-0 (2012/01)

DMS


VECTOR

NGD200



	1	2	3	4	5	6	7	8	9	10
A										
B										
C										
D										
E										
F										

CONTENTS	ABB SHT.NO.	REV.00	REV.01	REV.02
AC SUPPLY FOR ILLUMINATION & POWER SOCKET	411	X		
AC MCB AUX CONTACTS	412	X		
AC MCB AUX CONTACTS	416	X		
CURRENT TRANSFORMER INPUTS -87L-2	421	X		
VOLTAGE TRANSFORMER INPUTS - 87L-2	422	X		
COMMUNICATION CIRCUIT - 87L2	423	X		
MAIN-2 PROT. 87L-2 RELAY BINARY INPUTS	431	X		
MAIN-2 DIFF. PROTECTION TRIP RELAY CKT.	432	X		
MAIN-2 INTERTRIP RELAY CKT.	433	X		
BACKUP PROTECTION TRIP RELAY CIRCUIT	443	X		
OPTICAL / ELECTRICAL INTERFACE	446	X		
MAIN-2 INDICATION CKT.	478	X		
TRIP COIL-2 SUPERVISION CIRCUIT	491	X		
TRIP COIL-1 & CBF INITIATION CONTACTS	492	X		
CLOSING CIRCUIT	493	X		
COMMON ALARM CIRCUITS	494	X		
SPARE CONTACTS	495	X		
BLOCK REFERENCE-87L-2	498	X		
BLOCK REFERENCE-87L-2	499	X		
TERMINAL BLOCKS REFERENCE +R03.2	501	X		

AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		CONTENTS SHEET		 <b>نقل الكهرباء</b> National Grid sa		
		DRAWN BY: RIZ		CHECKED BY: KVR		132kV UGF-8710 RELAY PANEL-1/2				
		DATE STARTED: 24.01.2013		DATE COMPLETED: _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY				
		OPRG. DEPT.: CTPD		ENG. DEPT.: AUT-PSAC		RIYADH SAUDI ARABIA				
REV. NO.	DATE	DESCRIPTION				INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
00	13 04	FOR APPROVAL				-	C421	CD-322919	002 011	00
						NG/D2-0 (2012/01) VECTOR NGD200				

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

	1	2	3	4	5	6	7	8	9	10
A										
B										
C										
D										
E										
F										

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	FRAME CONNECTION		MAIN CONTACT OF A CIRCUIT BREAKER		RELAY WITH TWO MAKE CONTACTS, ONE OF THEM DELAYED WHEN OPERATING
	EARTH CONNECTION		PASSING MAKE CONTACT CLOSING MOMENTARILY DURING OPERATION AND RELEASE		RELAY WITH TWO ACTUATORS AND A TWO STABLE POSITIONS
	RESISTOR		BREAK CONTACT DELAYED WHEN OPERATING		SIGNALLING LAMP
	VARIABLE RESISTOR		MAKE CONTACT DELAYED WHEN RELEASING		MECHANICAL INOICATOR WITH AUTOMATIC RESET
	RESISTOR WITH PRESET ADJUSTMENT		TWO MECHANICAL LINKS CROSSING WITHOUT CONNECTION		MECHANICAL INOICATOR WITH NON-AUTOMATIC RESET
	CAPACITOR		JUNCTION OF MECHANICAL LINKS		ELECTRICALLY CONTROLLED MECHANICAL INDICATOR WITH AUTOMATIC RESET
	SEMICONDUCTOR DIODE USED AS A CAPACITIVE DEVICE		AUTOMATIC RESET		ELECTRICALLY CONTROLLED MECHANICAL INDICATOR WITH NON-AUTOMATIC RESET
	OPEN CONTACT, MAKE CONTACT		NON-AUTOMATIC RESET		RELAY WITH MECHANICAL INOICATOR
	CLOSED CONTACT, BREAK CONTACT		SWITCHING DEVICE WITH MANUAL OPERATION AND WITH AUTOMATIC RESET		RELAY WITH CHANGE-OVER CONTACT
	CHANGE-OVER CONTACT, BREAK BEFORE MAKE		SWITCHING DEVICE WITH MANUAL OPERATION AND WITH NON-AUTOMATIC RESET		ELECTRO-MECHANICAL POSITION INOICATOR WITH ONE OE-ENERGIZED AND ONE OPERATEO POSITION
	MAKE CONTACT WHICH IS EARLY WHEN OPERATING AND LATE WHEN RELEASING		CHANGE-OVER SWITCHING DEVICE WITH MANUAL CONTROL AUTOMATIC RESET FROM POSITION 1-2 TO THE NEUTRAL POSITION		ELECTRO-MECHANICAL POSITION INOICATOR WITH ONE OE-ENERGIZED AND TWO OPERATEO POSITION
	BREAK CONTACT WHICH IS LATE WHEN OPERATING AND EARLY WHEN RELEASING		RELAY WITH MAKE CONTACT		BELL, BUZZER
	SWITCHING DEVICE WITH MANUAL CONTROL		RELAY WITH MAKE CONTACT, DELAYED WHEN OPERATING		SIREN , HORN
	MAKE CONTACT DELAYEO WHEN OPERATING		RELAY WITH MAKE CONTACT, DELAYED WHEN RELEASING		
	BREAK CONTACT DELAYED WHEN RELEASING		RELAY WITH MAKE CONTACT, DELAYED WHEN OPERATING AND RELEASING		
	MAIN CONTACT OF A SWITCH DISCONNECTOR				
	MAIN CONTACT OF A DISCONNECTOR				

AS-BUILT BY	DATE	CONTRACT NO. I1131113/00	JOB ORDER NO. S-13656	GRAPHICAL SYMBOLS FOR DIAGRAMS		الشركة الوطنية لنقل الكهرباء				نقل الكهرباء	
				132kV UGF-8710 RELAY PANEL-1/2		National Grid sa					
				S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX				PLANT NO.	
				RIYADH		CD-322919				SHEET NO.	
				SAUDI ARABIA		-   C421				REV. NO.	
										00	
										011   012	
										NG/D2-D (2012/01)	
										DMS	
										VECTOR	
										NGD200	

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

	1	2	3	4	5	6	7	8	9	10
A										
B										
C										
D										
E										
F										

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	FUSE / LINK		WATTMETER		ELEMENT WITH NEGATED INHIBITING INPUT
	FUSE WITH THE SUPPLY SIDE INDICATED		VARMETER		ELEMENT WITH INPUT WHICH DOES NOT CARRY ANY LOGIC INFORMATION
	SINGLE-PHASE TRANSFORMER WITH TWO SEPARATE WINDINGS (TWO ALTERNATIVE FORMS)		POWER FACTOR METER		ELEMENT WITH POSTPONED OUTPUT
	SINGLE-PHASE TRANSFORMER WITH TWO SEPARATE WINDINGS (TWO ALTERNATIVE FORMS)		POSITION INDICATOR		AND-ELEMENT WITH TWO INPUTS
	SINGLE-PHASE TRANSFORMER WITH FERRO MAGNETIC CORE		SYNCHROSCOPE		OR-ELEMENT WITH TWO INPUTS
	SINGLE-PHASE VOLTAGE TRANSFORMER (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		RECORDING VOLTMETER		LOGIC THRESHOLD ELEMENT WITH FOUR INPUTS AND THRESHOLD VALUE 2
	SINGLE-PHASE VOLTAGE TRANSFORMER (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		RECORDING WATTMETER		ELEMENT WITH THREE INPUTS FOR "2 AND ONLY 2"
	CURRENT TRANSFORMER (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		HOUR METER		EXCLUSIVE OR-ELEMENT WITH THREE INPUTS
	CURRENT TRANSFORMER (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		WATT-HOUR METER		LOGIC IDENTITY ELEMENT WITH THREE INPUTS
	CURRENT TRANSFORMER WITH TWO CORES (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		WATT-HOUR METER FOR ENERGY FROM A BUSBAR SYSTEM		MAJORITY ELEMENT WITH THREE INPUTS
	CURRENT TRANSFORMER WITH TWO CORES (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		ELEMENT WITH STATIC INPUT		NEGATOR
	CURRENT TRANSFORMER WITH TWO SECONDARY WINDINGS ON ONE CORE (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		ELEMENT WITH STATIC NEGATED INPUT		NAND ELEMENT WITH TWO INPUTS
	CURRENT TRANSFORMER WITH TWO SECONDARY WINDINGS ON ONE CORE (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		ELEMENT WITH STATIC NEGATED OUTPUT		NOR ELEMENT WITH TWO INPUTS
	FILTER		ELEMENT WITH DYNAMIC INPUT		BISTABLE ELEMENT
	HIGH-PASS FILTER		ELEMENT WITH DYNAMIC NEGATED INPUT		
	BAND-PASS FILTER		ELEMENT WITH INHIBITING INPUT		
	VOLTMETER				
	AMMETER				

AS-BUILT BY _____ DATE _____		CONTRACT NO. I113I113/00		JOB ORDER NO. S-13656		GRAPHICAL SYMBOLS FOR DIAGRAMS		نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid sa	
DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-1/2		INDEX		PLANT NO.	
DATE STARTED 24.01.2013		DATE COMPLETED		S/S 8709-132/13.8KV IN AL-KHARJ CITY		DRAWING NUMBER		SHEET NO.	
PRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		CD-322919		SHT (CONT.)	
REV. NO. 00		DATE 13 04		FOR APPROVAL		- C421		012 013	
								REV. NO. 00	

NG/D2-0 (2012/01)  
 DMS VECTOR NGD200

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

	1	2	3	4	5	6	7	8	9	10
A										
B										
C										
D										
E										
F										
G										

LEGENDS

±R1

DC SUPPLY - MAIN PROTECTION

±R2

DC SUPPLY - SECONDARY PROTECTION

±R3

DC SUPPLY - BACK UP PROTECTION

±IT

DC SUPPLY - INTER TRIP

FL

DC SUPPLY - FLASHING CIRCUIT

BB RS±

DC SUPPLY - BUS BAR - PROTECTION RESET

BB CBF±/CBF±

DC SUPPLY - CBF PROTECTION

R

RESET BUS - ALARM SYSTEM

CR

CONTROL ROOM

ECC

ENERGY CONTROL CENTRE

LDCAL

THE LOCATION OF CONTROLLED DEVICE

REMOTE

ANY OTHER LOCATION NOT LOCAL

DN

CB NORMALLY OPEN AUXILIARY CONTACT

OFF

CB NORMALLY CLOSED AUXILIARY CONTACT

A

COMMON

T

TEST POSITION

S

SERVICE POSITION

CS

CLOSE IN SERVICE POSITION

CT

CLOSE IN TEST POSITION

LS

LOCAL SERVICE

LT

LOCAL TEST

LC

LOCAL CLOSE

LD

LOCAL OPEN

RO

REMOTE OPEN

DP

OPERATE

RE

RESET

NOTES

LABELS

WHITE LABEL WITH BLACK LETTERING WILL BE PROVIDED FOR ALL MOUNTED APPARATUS EQUIPMENT IDENTIFICATION AND FUNCTION REFERENCE LABEL WILL BE PROVIDED FOR FRONT MOUNTED EQUIPMENTS OF THE PANEL AND EQUIPMENT IDENTIFICATION LABEL WILL BE PROVIDED FOR INTERNALLY MOUNTED EQUIPMENTS

WIRING

PVC INSULATED 600V GRADE

2.5 SO.mm. YELLOW COLOURED FOR CT CIRCUITS

2.5 SD.mm. RED COLOURED FOR VT CIRCUITS

1.5 SO.mm. GREY COLOURED FOR DC SUPPLY, SCADA AND CONTROL CIRCUITS

2.5 SO.mm. BLACK COLOURED FOR AVC AND AC CIRCUITS

2.5 SD.mm. YELLOW/GREEN COLOURED FOR EARTHING CONNECTIONS

FOLLOWING MARKERS SHALL BE PROVIDED ON FOLLOWING WIRES:

+ SIGN FOR DC + WIRE

- SIGN FOR DC - WIRE

LUGS

A. CT CIRCUITS- RING TYPE

B. OTHER CIRCUITS - SPADE TYPE

FERULLING

YELLOW TUBE 3.2 mm FOR 1.5SD mm WIRES AND 4.2 FOR 2.5 SD mm WIRES ( AS PER 31 - TMSS-1, RE.0 )

AS-BUILT BY _____ DATE _____		CONTRACT NO. I113I113/00	JOB ORDER NO. S-13656	COMMON LEGEND		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
		DRAWN BY RIZ	CHECKED BY KVR	132kV UGF-8710 RELAY PANEL-1/2		National Grid SA			
		DATE STARTED 24.01.2013	DATE COMPLETED _____	S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
		OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC	RIYADH SAUDI ARABIA		-	C421	CD-322919	013   014
REV. NO.	DATE	DESCRIPTION						REV. NO.	
00	13 04	FOR APPROVAL						00	

DMS

VECTOR

NGD200

NG/D2-0 (2012/01)

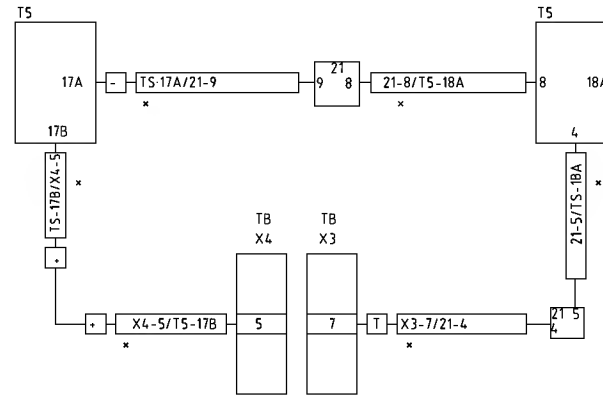
THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



1 2 3 4 5 6 7 8 9 10

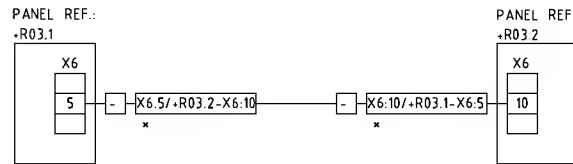
A  
B  
C  
D  
E  
F

FOR 132kV RELAY & CONTROL, PROTN. PANELS



AS PER IEC-391 FIG 14a (W/O SUPPLEMENTARY/IDENTIFICATION MARK)

FOR 132kV PANELS INTERPANEL WIRING



AS PER IEC-391 FIG 14d (W/O SUPPLEMENTARY/IDENTIFICATION MARK)

WIRES -  
PVC insulated, stranded,  
cooled annealed copper  
conductor graded for 1000V

LUGS -  
Pre-Insulated

- a. CT Circuits - 2.5 Sqmm PVC Yellow colour
- b. VT Circuits - 2.5 Sqmm PVC Red colour
- c. DC, & CONTROL Circuits - 1.5 Sqmm PVC Grey colour
- d. Alarm Circuits - 2.5 Sqmm PVC Blue colour
- e. AVC & AC Circuits - 2.5 Sqmm PVC Black colour
- f. Earth Circuits - 2.5 Sqmm PVC Yellow/Green colour
- o) CT Circuits - Ring type
- b) Other Circuits - Spade type

- NOTE:1 ADDITIONAL MARKING AS APPLICABLE
- NOTE:2 FERRULE NUMBERING WILL BE BLACK LETTERS ON YELLOW TUBE  
3.2 mm for 1.5 sq mm wires and  
4.2 mm for 2.5 sq mm wires  
( As per 31-TMSS-1, REV 0 )
- NOTE:3 STARTING POINT OF THE FERRULE LEFT TO RIGHT

AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. I1131113/00 JOB ORDER NO. S-13656

00	13 04	FOR APPROVAL
REV. NO.	DATE	DESCRIPTION

DRAWN BY RIZ CHECKED BY KVR  
DATE STARTED 24.01.2013 DATE COMPLETED \_\_\_\_\_  
OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

FERRULE AND WIRING DETAILS

132kV UGF-8710 RELAY PANEL-1/2

S/S 8709-132/13.8KV IN AL-KHARJ CITY  
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



National Grid SA

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322919	014   015	00


NG/D2-0 (2012/01)

DMS VECTOR NGD200

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



	1	2	3	4	5	6	7	8	9	10
A										
B										
C										
D										
E										
F										

MANUFACTURER	SCHEMATICS DWG.NO	PANEL DESCRIPTION	PANEL REFERENCE
 PROTECTION & SUBSTATION AUTOMATION		SS 8709 13.8KV RELAY PANELS	
	CD-322952	13.8KV Capacitor Bank-1 Protection Panel	•CBP-1
	CD-322954	13.8KV Capacitor Bank-2 Protection Panel	•CBP-2
	CD-322956	13.8KV Capacitor Bank-2 Protection Panel	•CBP-3
	CD-322958	13.8 KV ACCS PANEL	•ACCS
	CD-322962	13.8KV ACSE PANEL	•ACSE
	CD-322968	13.8KV Under Voltage Load Shedding Panel	•UVLS
	CD-322964	13.8KV Under Frequency Load Shedding Panel-1	•UFLS01
	CD-322966	13.8KV Under Frequency Load Shedding Panel-2	•UFLS02

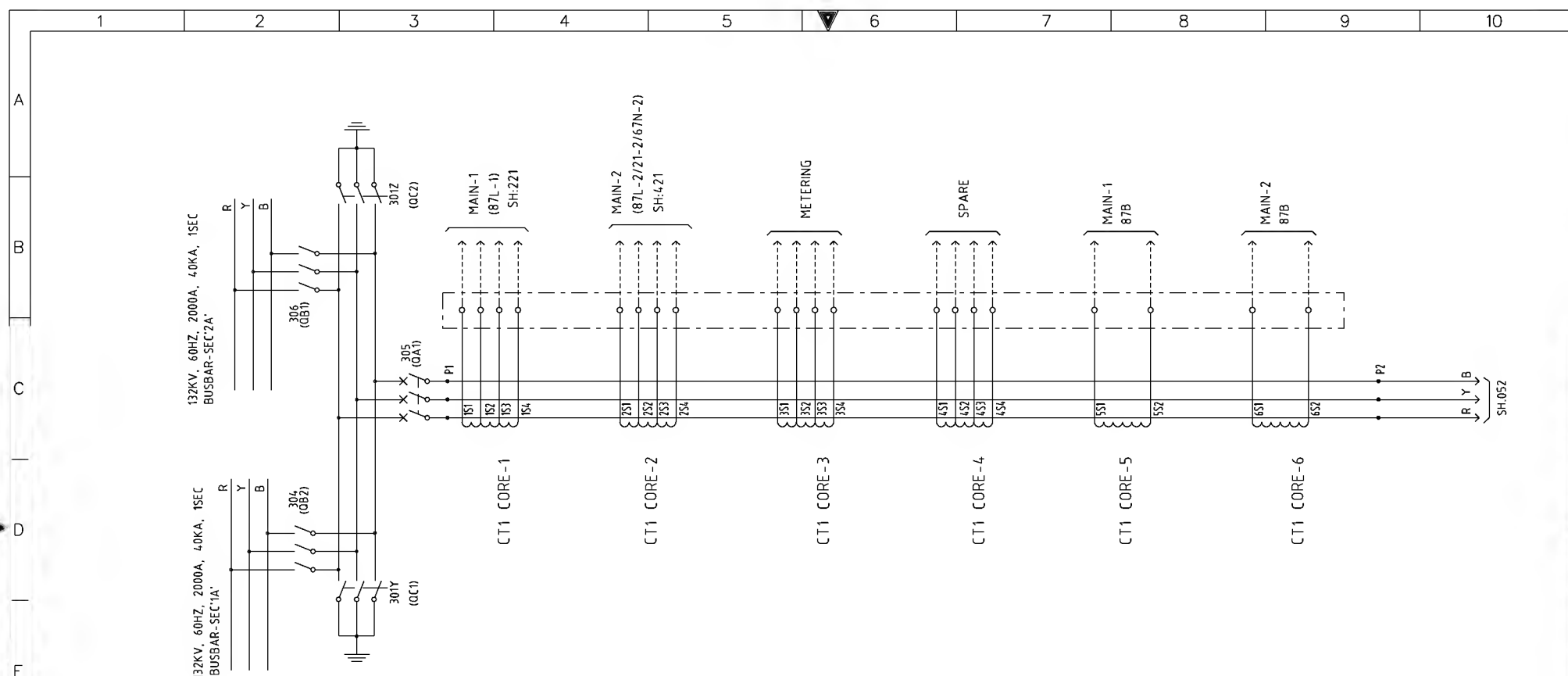
AS-BUILT BY _____ DATE _____			CONTRACT NO. I1131113/00		JOB ORDER NO. S-13656		DRAWING REFERENCES		نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid SA					
G			DRAWN BY RIZ CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-1/2				INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.	REV. NO.
			DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY								SHT   CONT.	
	00	13 04	FOR APPROVAL		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		-	C421	CD-322919		016   051	00
	REV. NO.	DATE	DESCRIPTION											

NG/D2-0 (2012/01)

DMS

VECTOR

NGD200

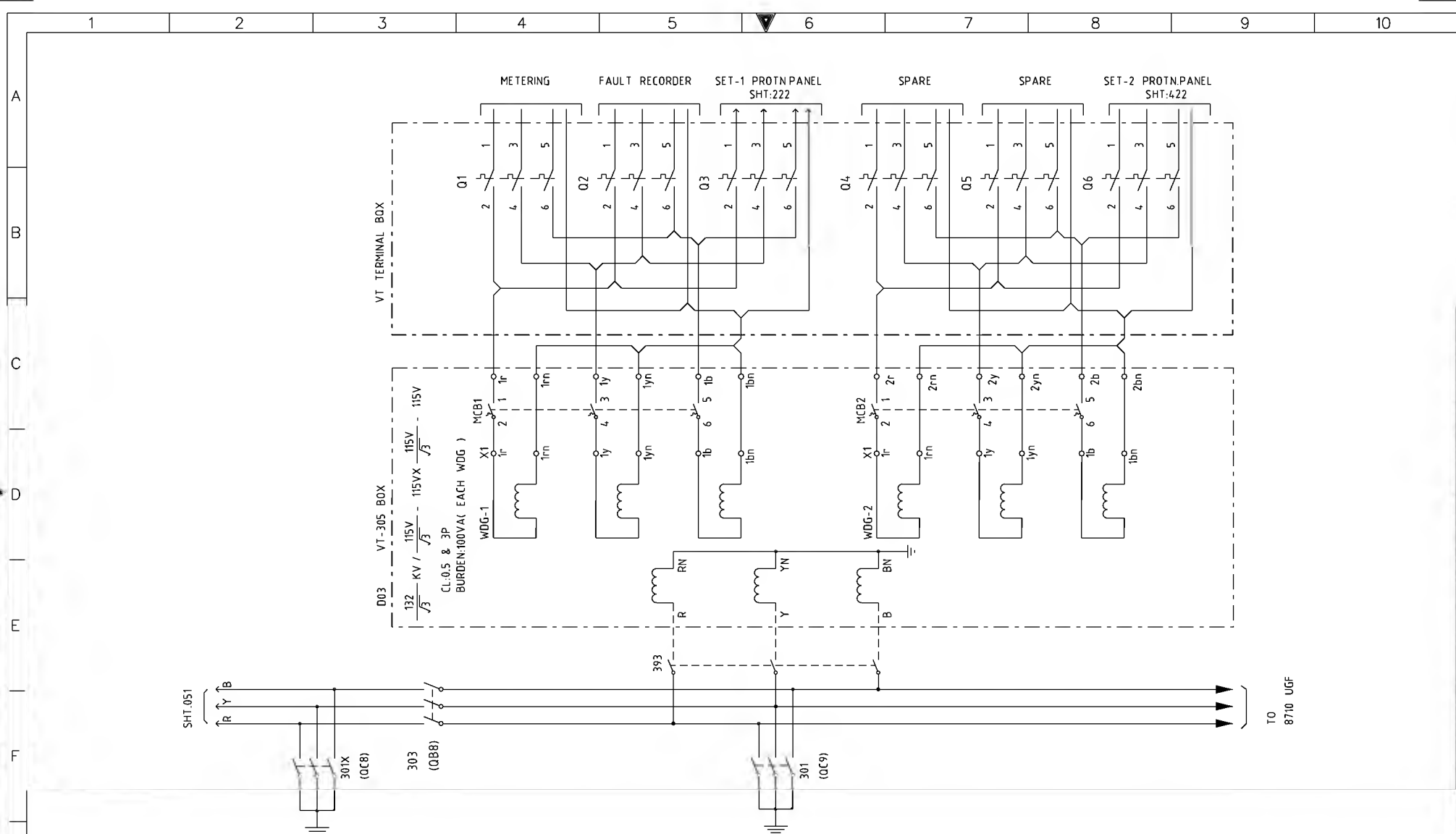


CT	RATIO	CLASS	VK IN VOLTS	IMAG @ VK IN mA	RCT IN (OHMS)	BURDEN IN VA	FUNCTION
CT1-1	1600-1200-800/1A	X	>1400	≤100	≤2	-	MAIN-1(1ED-1)
CT1-2	1600-1200-800/1A	X	>1400	≤100	≤2	-	MAIN-2(1ED-2)
CT1-3	1600-1200-800/1A	X	>1400	≤100	≤2	-	METERING
CT1-4	1600-1200-800/1A	X	>500	≤100	≤5	-	SPARE
CT1-5	2000/1A	X	>1400	≤25	≤2	-	87B MAIN-1
CT1-6	2000/1A	X	>1400	≤25	≤2	-	87B MAIN-2

AS-BUILT BY _____ DATE _____		CONTRACT NO. I113I113/00		JOB ORDER NO. S-13656		PRIMARY SYSTEM (UG-8710)		<div style="text-align: right;"> <b>نقل الكهرباء</b>  <b>الشركة الوطنية لنقل الكهرباء</b>  <b>National Grid SA</b> </div>	
DRAWN BY: RIZ		CHECKED BY: KVR		132kV UGF-8710 RELAY PANEL-1/2					
DATE STARTED: 24.01.2013		DATE COMPLETED: _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX		PLANT NO.	
PRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		DRAWING NUMBER		SHEET NO.	
REV. NO. 00		DATE 13 04		DESCRIPTION FOR APPROVAL		CD-322919		051 052	
								REV. NO. 00	

NG/D2-0 (2012/01)  
 DMS VECTOR NGD200

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



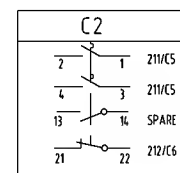
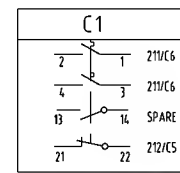
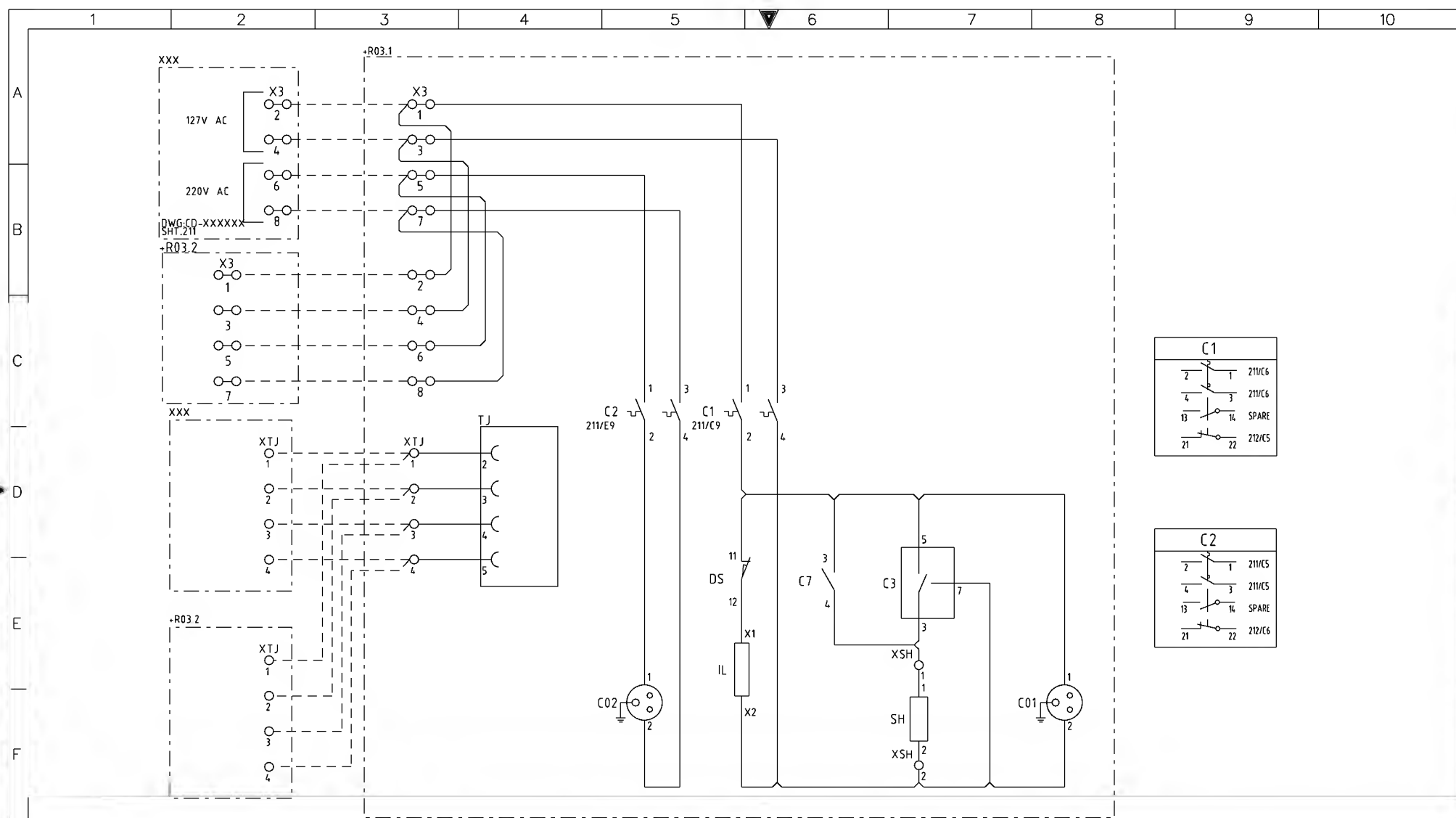
AS-BUILT BY _____		DATE _____	CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656
DRAWN BY RIZ		CHECKED BY KVR		
DATE STARTED 24.01.2013		DATE COMPLETED _____		
PRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		

PRIMARY SYSTEM (UG-8710)	
132kV UGF-8710 RELAY PANEL-1/2	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH	SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
-	C421	CD-322919	SHT (CONT.)
			REV. NO.
			00

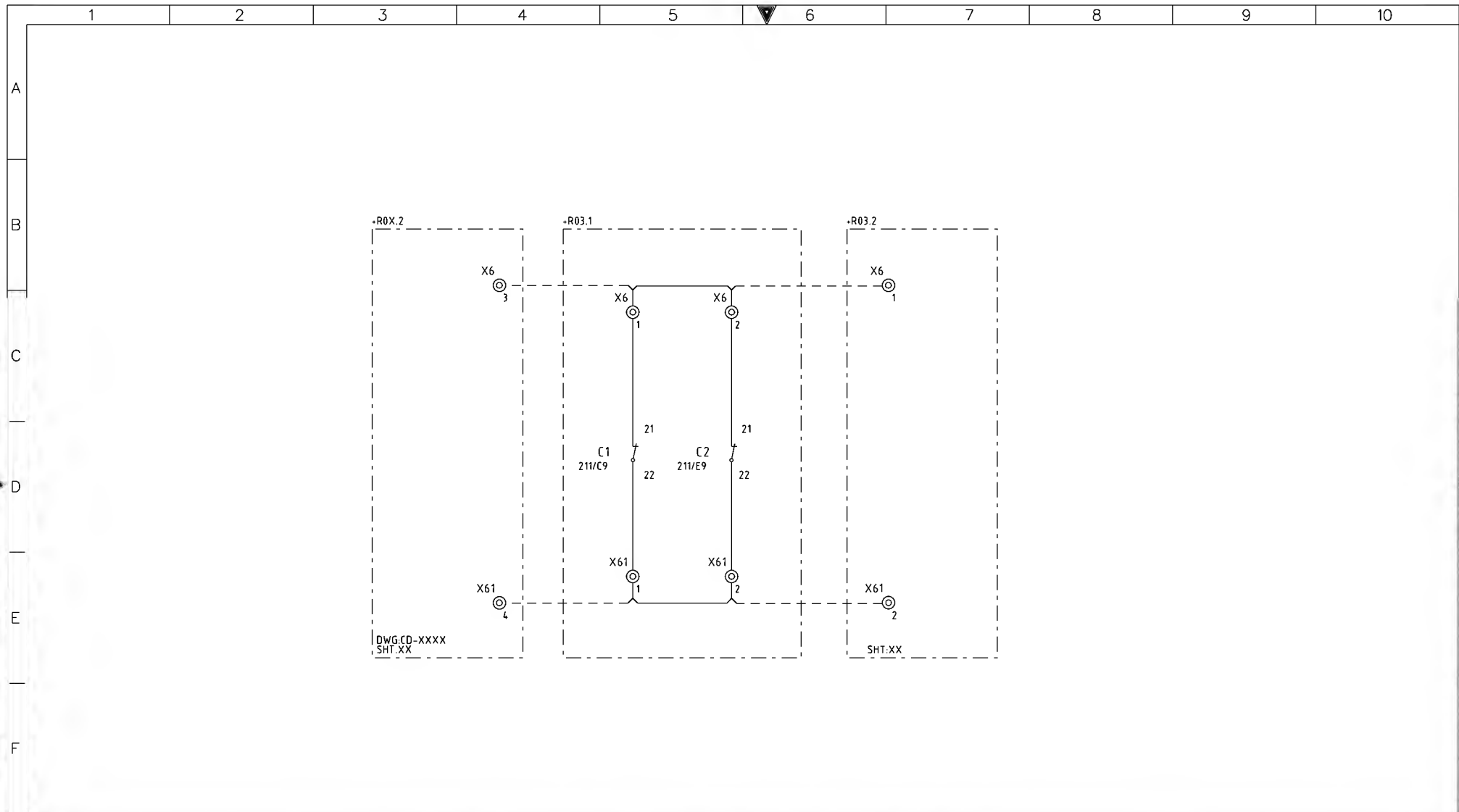
NG/D2-0 (2012/01)  
DMS VECTOR NGD200

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

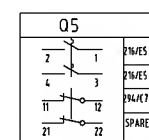
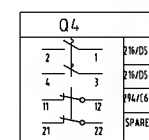
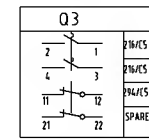
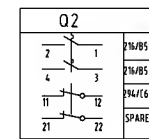
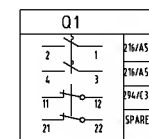
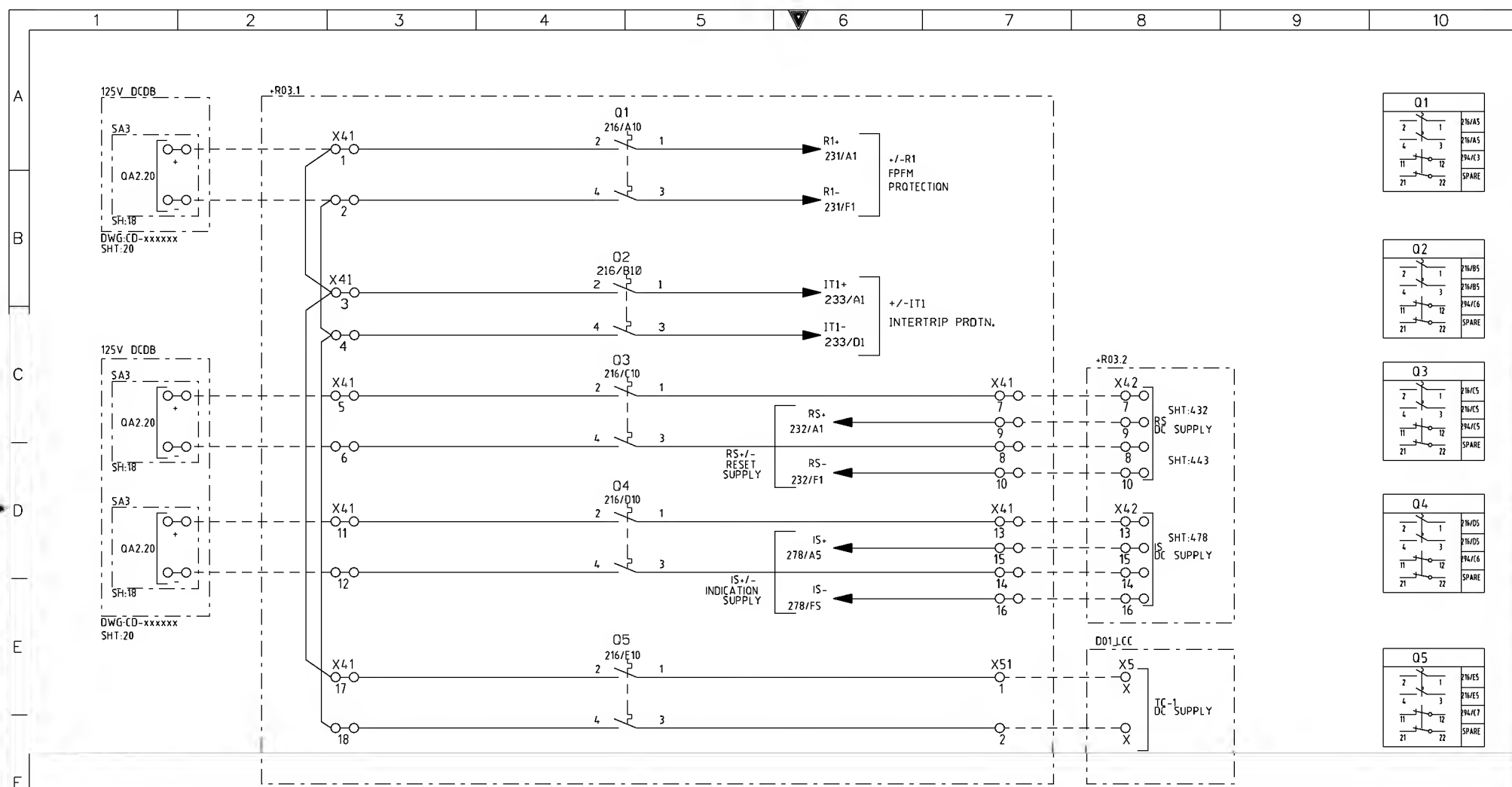


AS-BUILT BY _____ DATE _____		CONTRACT NO. I113I113/00	JOB ORDER NO. S-13656	<b>AC SUPPLY FOR ILLUMINATION &amp; POWER SOCKET</b> 132kV UGF-8710 RELAY PANEL-1/2 S/S 8709-132/13.8KV IN AL-KHARJ CITY RIYADH SAUDI ARABIA		<b>الشركة الوطنية لنقل الكهرباء</b> National Grid SA		INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO. - C421 CD-322919 211   212 00	
DRAWN BY RIZ CHECKED BY KVR		DATE STARTED 24.01.2013 DATE COMPLETED _____							
00 13 04 FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		PRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		NG/D2-0 (2012/01)		DMS VECTOR NGD200	

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	AC MCB AUX CONTACTS		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
		DRAWN BY RIZ	CHECKED BY KVR	132kV UGF-8710 RELAY PANEL-1/2		National Grid sa			
		DATE STARTED 24.01.2013	DATE COMPLETED _____	S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
		OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC	RIYADH SAUDI ARABIA		-	C421	CD-322919	212   216
REV. NO.	DATE	DESCRIPTION						REV. NO.	
00	13 04	FOR APPROVAL						00	



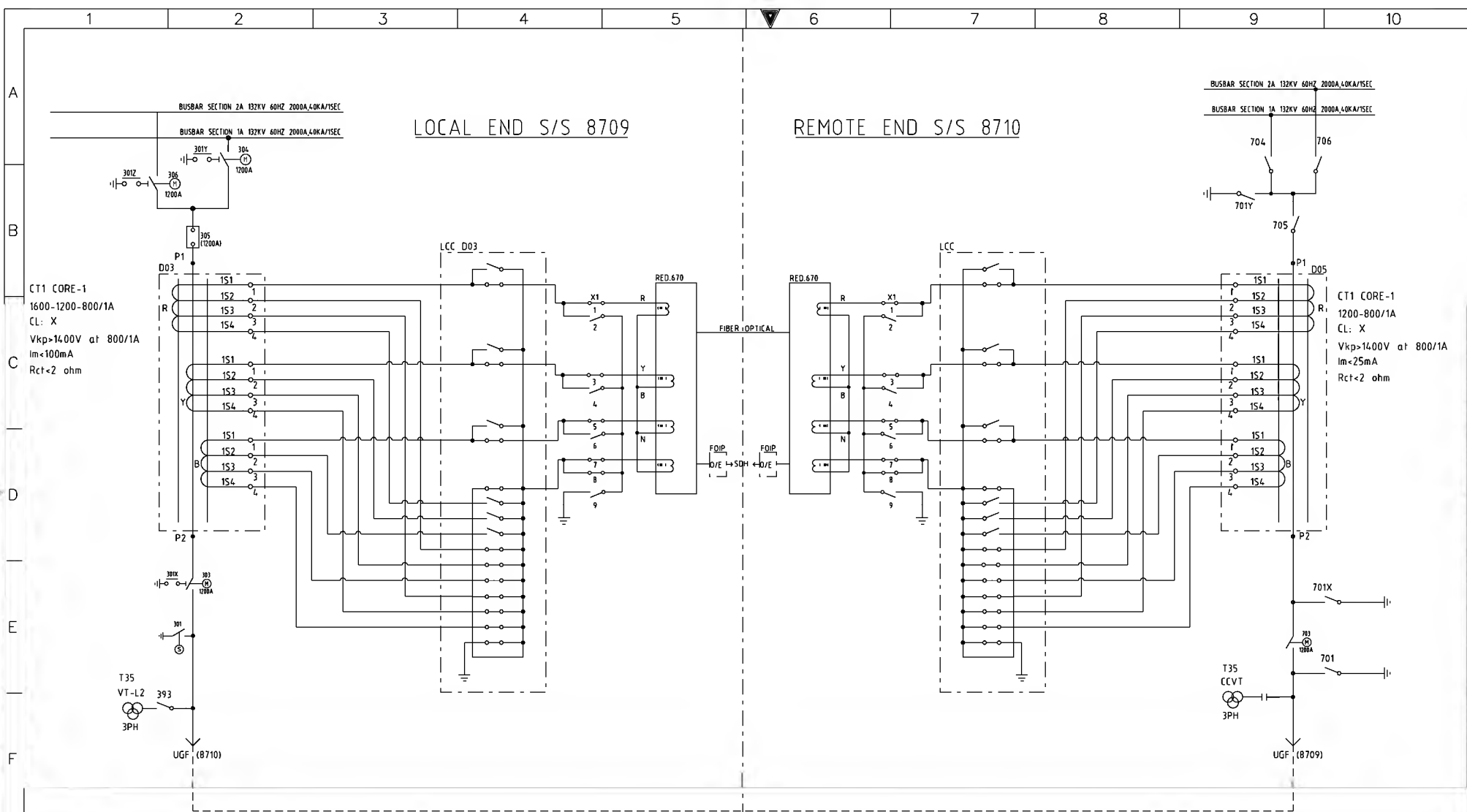
AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	DC SUPPLY DISTRIBUTION		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
				132kV UGF-8710 RELAY PANEL-1/2		National Grid sa			
DRAWN BY RIZ CHECKED BY KVR		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
FOR APPROVAL		PRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		-	C421	CD-322919	SHT [CONT.]
REV. NO.	DATE	DESCRIPTION							REV. NO.
00	13 04								216/221

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.









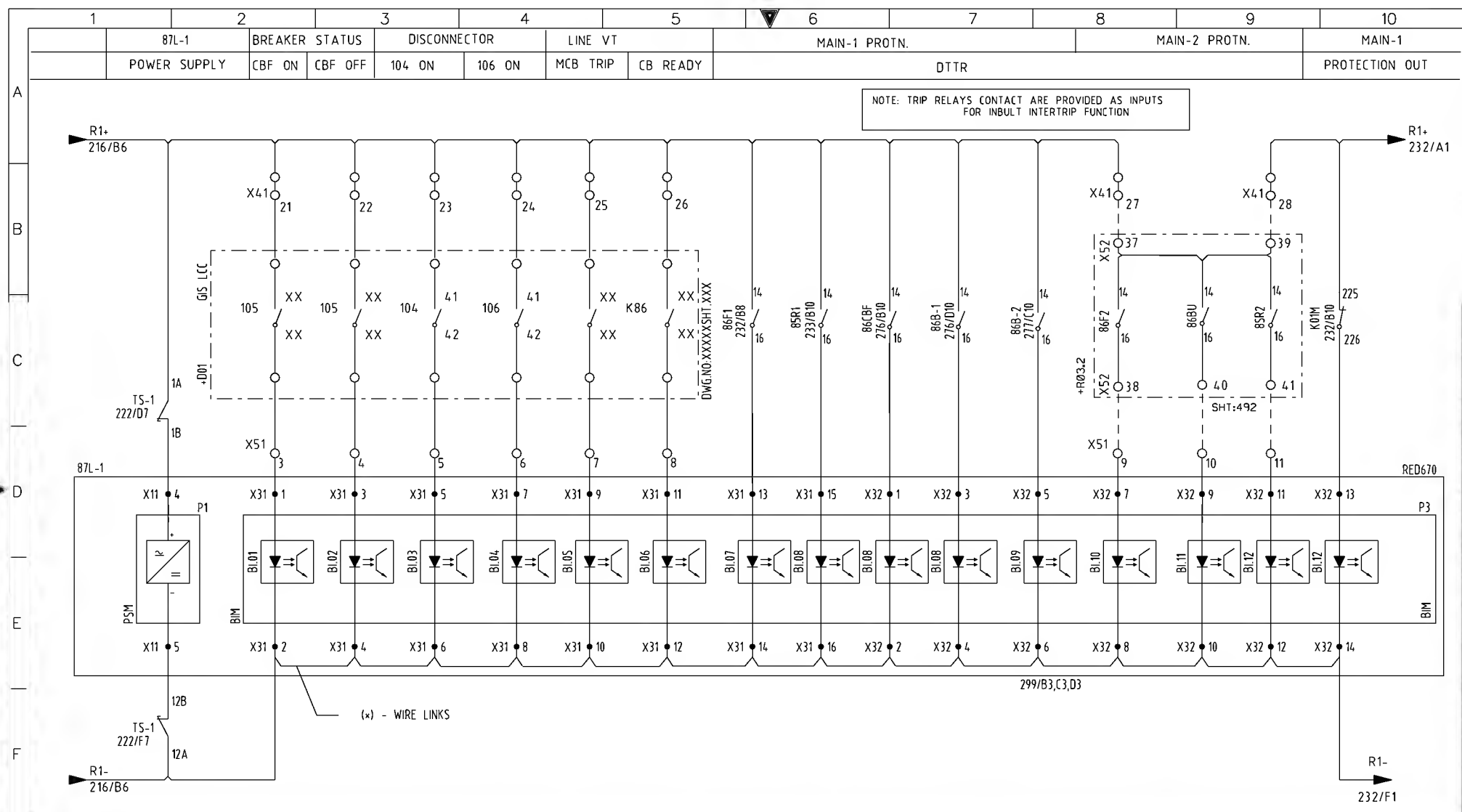
AS-BUILT BY	DATE	CONTRACT NO. I1131113/00	JOB ORDER NO. S-13656
DRAWN BY RIZ	CHECKED BY KVR	DATE STARTED 24.01.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC
00	13 04	FOR APPROVAL	

COMMUNICATION CIRCUITS
132kV UGF-8710 RELAY PANEL-1 +R03.1
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء				نقل الكهرباء National Grid SA	
INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.	REV. NO.
-	C421	CD-322919		SHT 223 CONT. 231	00

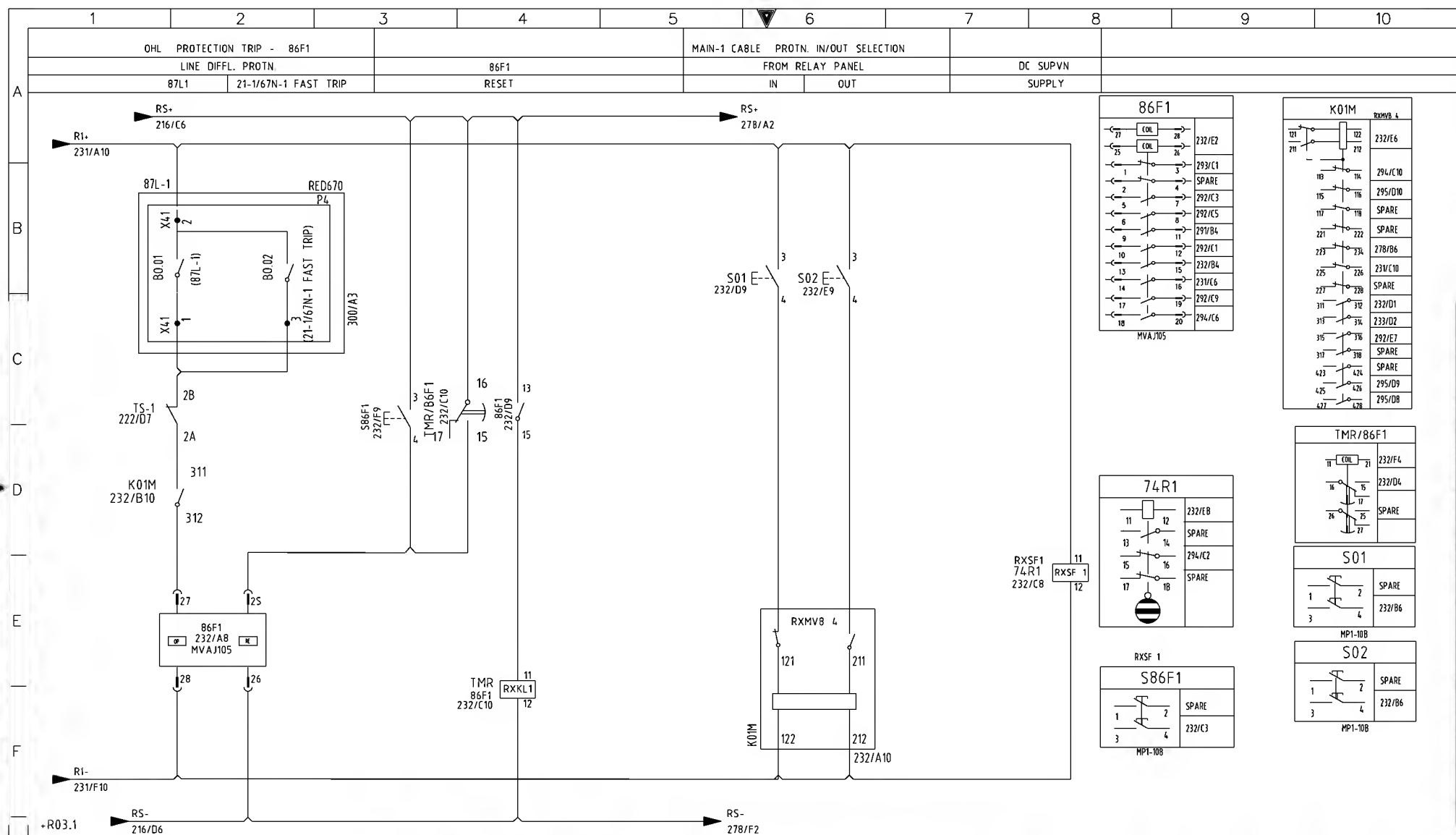
NG/D2-0 (2012/01)  
DMS VECTOR NGD200

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

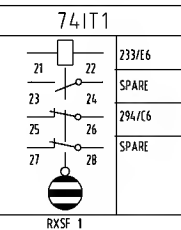
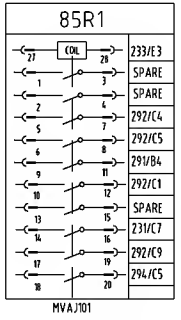
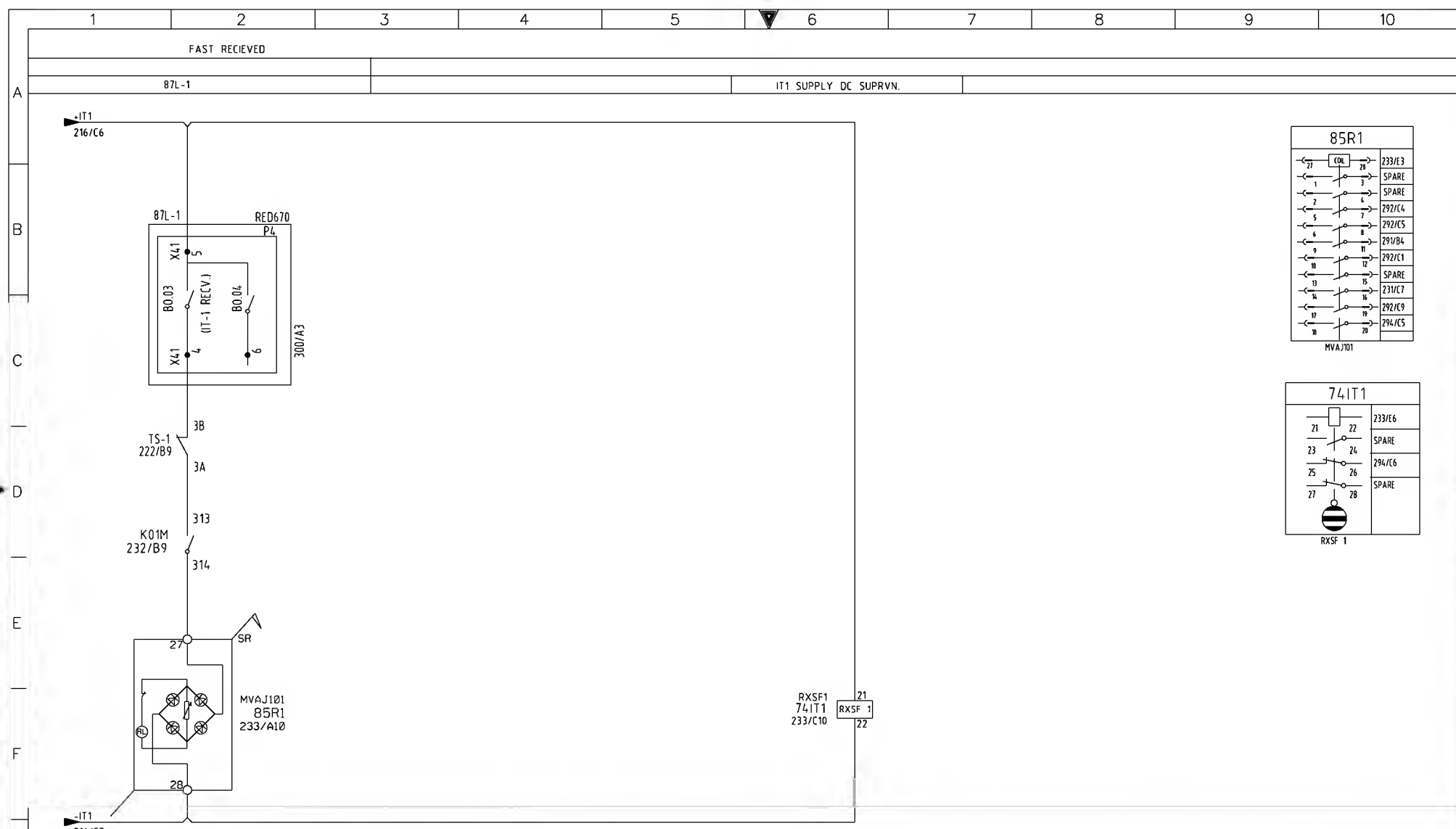


AS-BUILT BY _____ DATE _____		CONTRACT NO. I113I113/00		JOB ORDER NO. S-13656		MAIN-1 PROTN. 87L-1 RELAY-BINARY INPUTS 132kV UGF-8710 RELAY PANEL-1 +R03.1 S/S 8709-132/13.8KV IN AL-KHARJ CITY RIYADH SAUDI ARABIA		<div style="text-align: center;">   <b>نقل الكهرباء</b>          National Grid SA       </div>	
DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u>		DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____		INDEX PLANT NO. _____ DRAWING NUMBER <u>CD-322919</u>					
FOR APPROVAL		DATE STARTED _____ DATE COMPLETED _____		PRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>		SHEET NO. <u>231</u> OF <u>232</u>		REV. NO. <u>00</u>	
REV. NO.	DATE	DESCRIPTION				-   C421		NG/D2-0 (2012/01) NGD200	

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

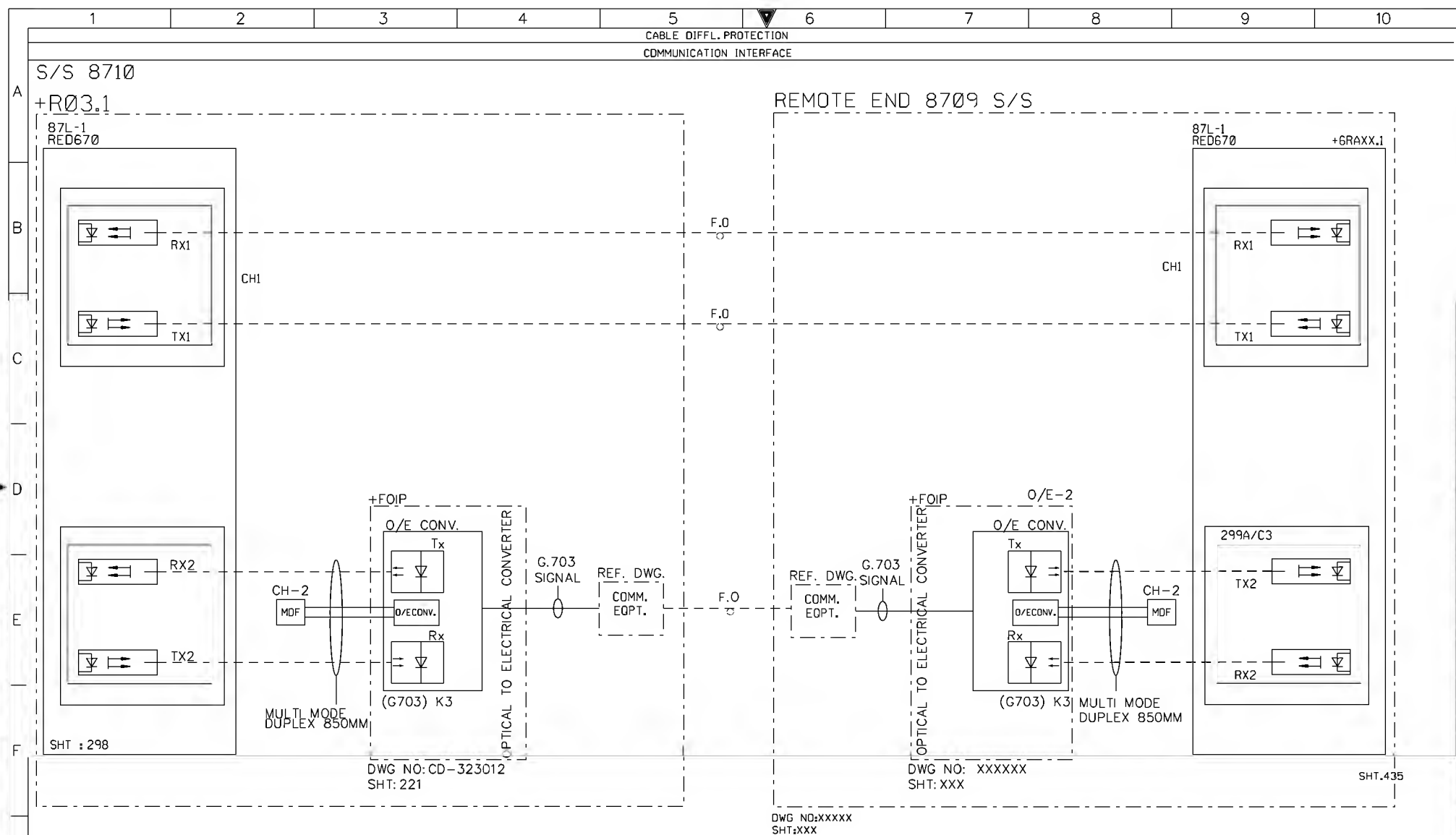


AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		MAIN-1 CABLE DIFF. PROTECTION TRIP RELAY CKT.		132kV UGF-8710 RELAY PANEL-1 +R03.1		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
DRAWN BY RIZ		CHECKED BY KVR		DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		National Grid sa		SHEET NO. 00	
FOR APPROVAL		DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		RIYADH SAUDI ARABIA		INDEX PLANT NO. C421		DRAWING NUMBER CD-322919	
REV. NO. 00		DATE 13 04		DESCRIPTION		OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		SHEET NO. 232/233		REV. NO. 00	



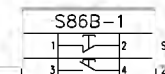
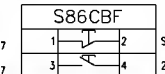
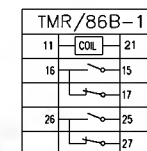
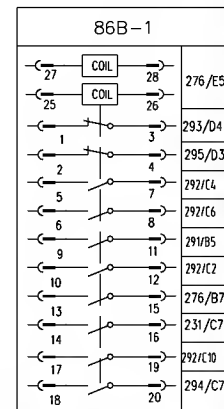
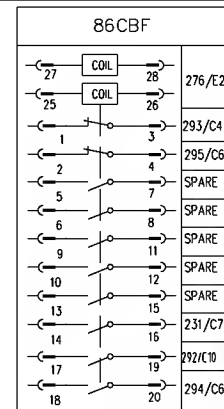
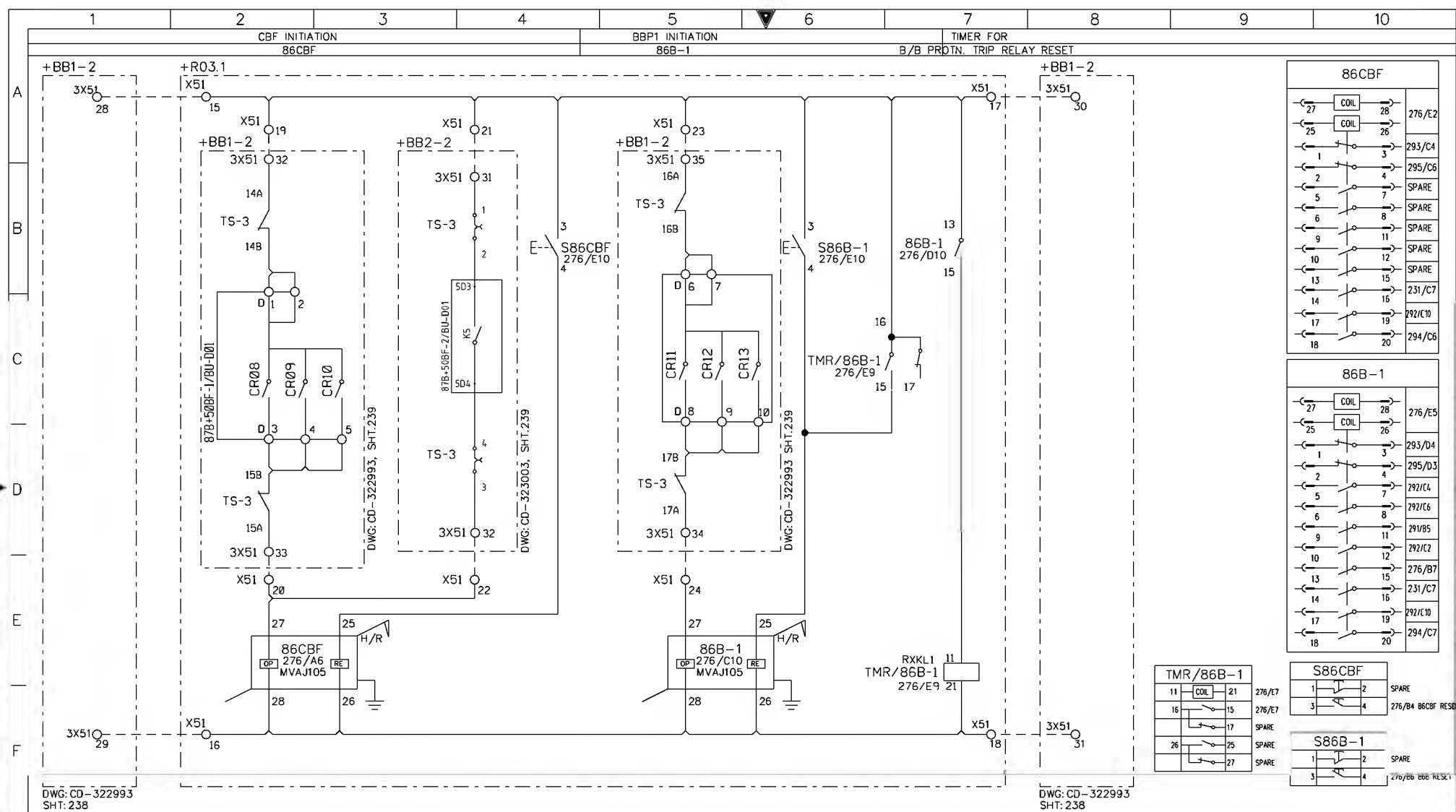
AS-BUILT BY _____		DATE _____	CONTRACT NO. I113I13/00	JOB ORDER NO. S-13656	MAIN-1 INTER TRIP CIRCUIT		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		
DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-1 +R03.1		INDEX		PLANT NO.		DRAWING NUMBER	
DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		-		C421		CD-322919	
PRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		SHEET NO.		SHT		CONT.	
REV. NO. 00		DATE 13 04		FOR APPROVAL		233		246		00	
NG/D2-0 (2012/01)		DMS		VECTOR		NGD200					

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



AS-BUILT BY _____ DATE _____		CONTRACT NO. 1113113/00	JOB ORDER NO. S-13656	COMMUNICATION INTERFACE		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
		DRAWN BY RIZ	CHECKED BY KVR	132kV UGF-8710 RELAY PANEL-1 +R03.1		National Grid sa			
		DATE STARTED 24.01.2013	DATE COMPLETED _____	S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
00		13 04	FOR APPROVAL	RIYADH SAUDI ARABIA		-	C421	CD-322919	SHT/CONT.
REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC			246/276	00

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. 1113113/00 JOB ORDER NO. S-13656

DRAWN BY RIZ CHECKED BY KVR

DATE STARTED 24.01.2013 DATE COMPLETED \_\_\_\_\_

FOR APPROVAL

PRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

REV. NO. DATE DESCRIPTION

CBF-1/2 & BUSBAR PROTN-1 TRIP RELAY CIRCUIT

132kV UGF-8710 RELAY PANEL-1 +R03.1

S/S 8709-132/13.8KV IN AL-KHARJ CITY

RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



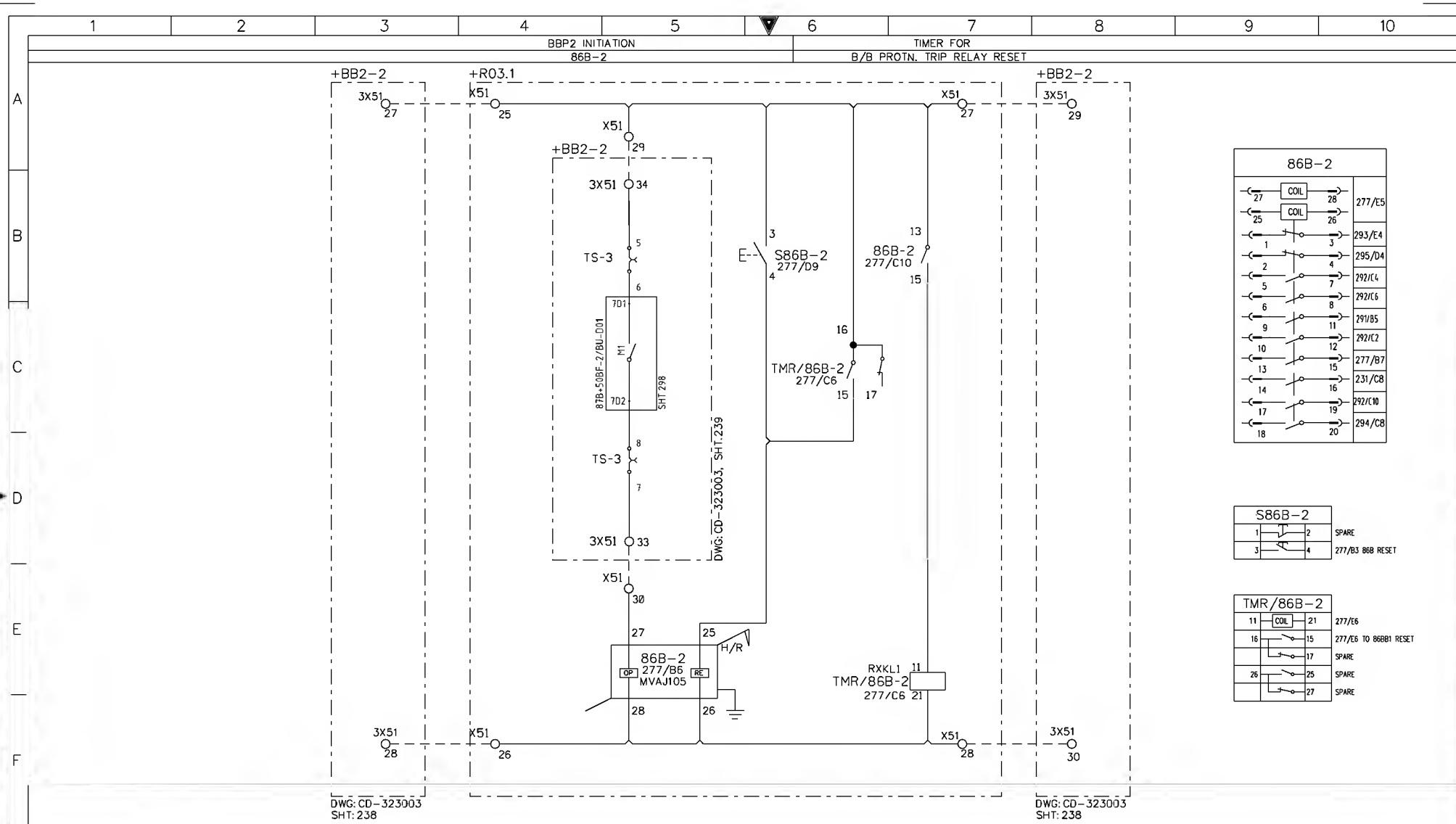
INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO.

- C421 CD-322919 276/277 00

NG/D2-D (2012/01)  
DMS VECTOR NGD200

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF NATIONAL GRID SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



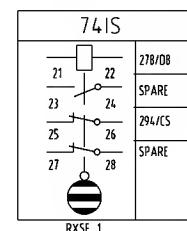
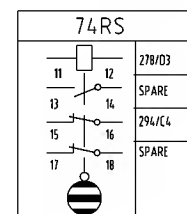
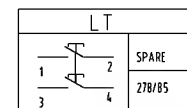
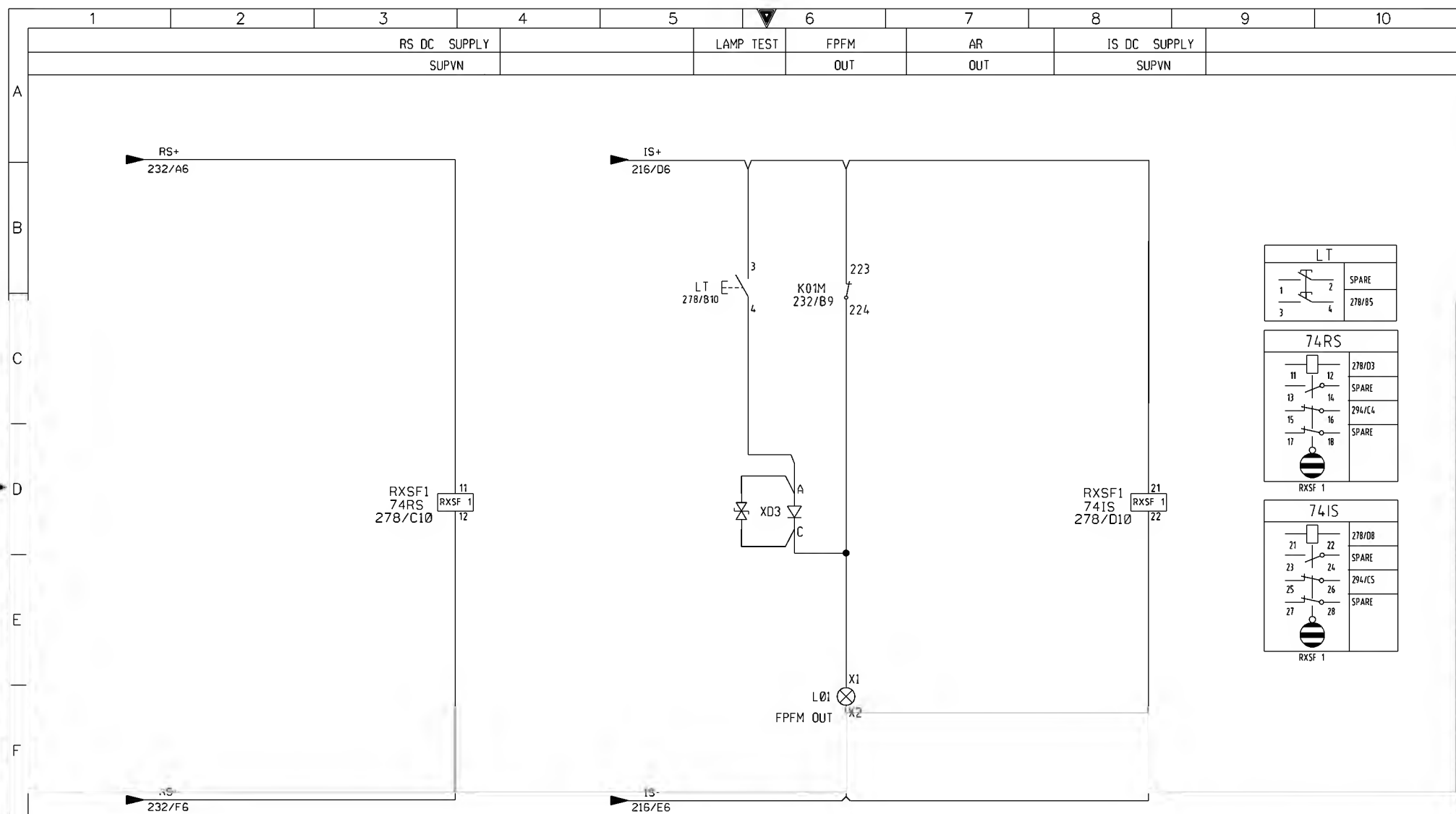


86B-2			
27	COIL	28	277/E5
25	COIL	26	293/E4
1	3	2	295/D4
2	4	3	292/C4
5	7	4	292/C6
6	8	5	291/B5
9	11	6	292/C2
10	12	7	277/B7
13	15	8	231/C8
14	16	9	292/C10
17	19	10	294/C8
18	20	11	

S86B-2			
1	2	SPARE	
3	4	277/B3 86B RESET	

TMR/86B-2			
11	COL	21	277/E6
16	15	277/E6 TO 86B1 RESET	
17	SPARE		
26	25	SPARE	
27	SPARE		

AS-BUILT BY _____ DATE _____		CONTRACT NO. 1113113/00	JOB ORDER NO. S-13656	BUSBAR PROTN-2 TRIP RELAY CIRCUIT		الشركة الوطنية لنقل الكهرباء	
DRAWN BY RIZ CHECKED BY KVR		DATE STARTED 24.01.2013 DATE COMPLETED _____		132kV UGF-8710 RELAY PANEL-1 +R03.1		National Grid SA	
DATE STARTED 24.01.2013 DATE COMPLETED _____		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.
FOR APPROVAL		SAUDI ARABIA		RIYADH		-	C421
REV. NO.	DATE	DESCRIPTION		DRAWING NUMBER		SHEET NO.	
00	13 04			CD-322919		277/278	



AS-BUILT BY _____		DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656	
				DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u>			
				DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____			
00		13 04		FOR APPROVAL			
REV. NO.		DATE		DESCRIPTION			
				OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>			

BUSBAR PROT-N-2 TRIP RELAY CIRCUIT			
132kV UGF-8710 RELAY PANEL-1 +R03.1			
S/S 8709-132/13.8KV IN AL-KHARJ CITY			
RIYADH		SAUDI ARABIA	

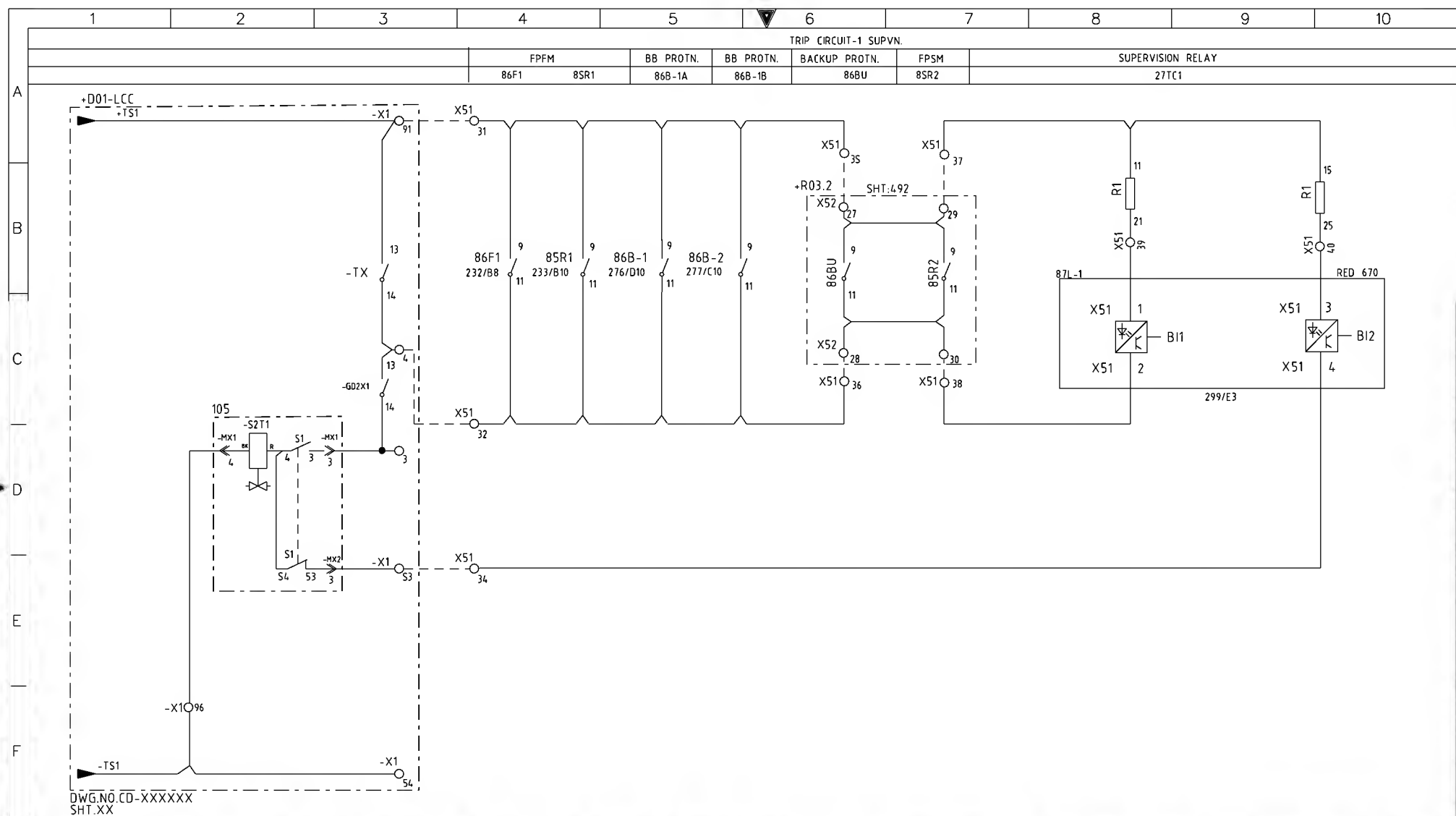
**نقل الكهرباء**

الشركة الوطنية لنقل الكهرباء

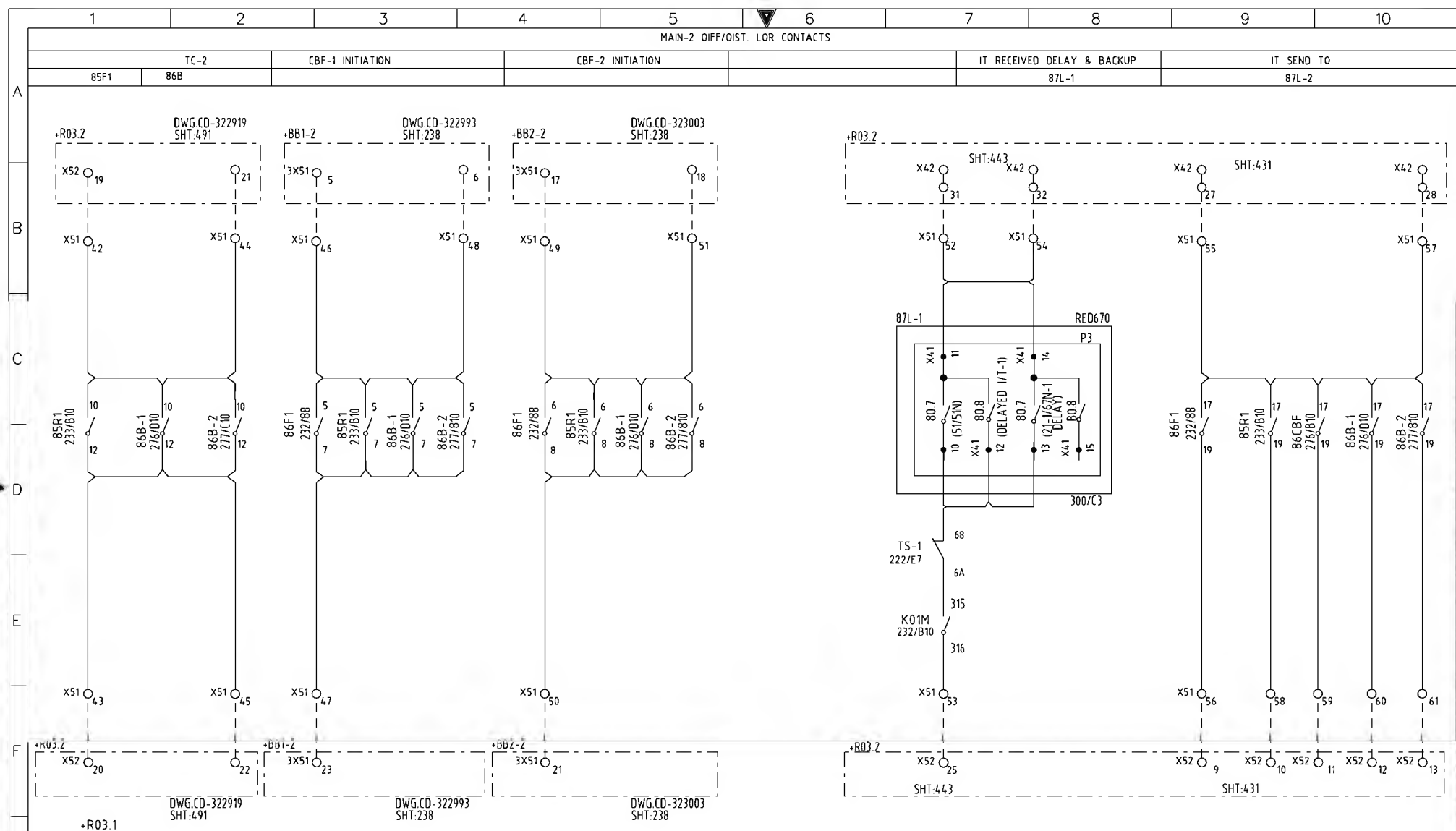
National Grid SA

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322919	278/291	00

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



AS-BUILT BY _____ DATE _____		CONTRACT NO. I1131113/00		JOB ORDER NO. S-13656		TRIP COIL-1 SUPERVISION CIRCUIT		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
		DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-1 +R03.1		National Grid SA			
		DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX		PLANT NO.	
		PRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		DRAWING NUMBER		SHEET NO.	
REV. NO.		DATE		DESCRIPTION		- C421		CD-322919		291 292	
00		13 04		FOR APPROVAL		- C421		CD-322919		291 292	



AS-BUILT BY _____ DATE _____		CONTRACT NO. I1131113/00		JOB ORDER NO. S-13656		TRIP COIL-2/DELAY TRIP/CBF CIRCUIT			
DRAWN BY RIZ		CHECKED BY KVR		DATE STARTED 24.01.2013		DATE COMPLETED _____		132kV UGF-8710 RELAY PANEL-1 +R03.1	
FOR APPROVAL		PRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		S/S 8709-132/13.8KV IN AL-KHARJ CITY		RIYADH SAUDI ARABIA	
REV. NO.	DATE	DESCRIPTION		INDEX		PLANT NO.		DRAWING NUMBER	
00	13 04					C421		CD-322919	
								SHEET NO. 292	
								SHT (CONT.) 293	
								REV. NO. 00	

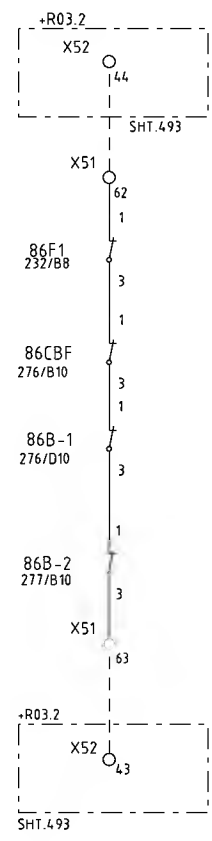
NG/D2-0 (2012/01)  
DMS VECTOR NGD200

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.


1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	----

CLOSE BLOCKING  
PROTECTION

A  
  
B  
  
C  
  
D  
  
E  
  
F

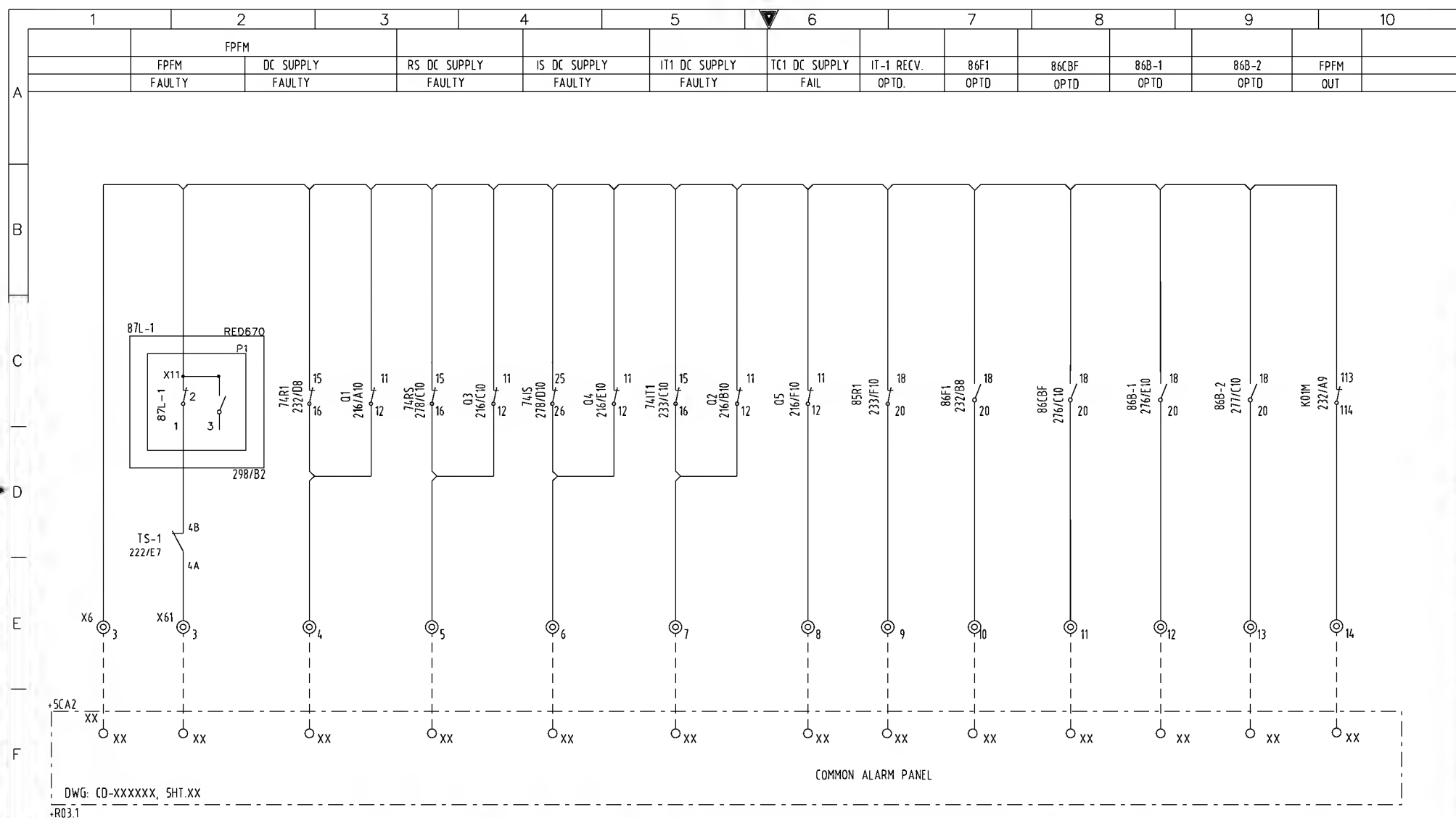


+R03.1

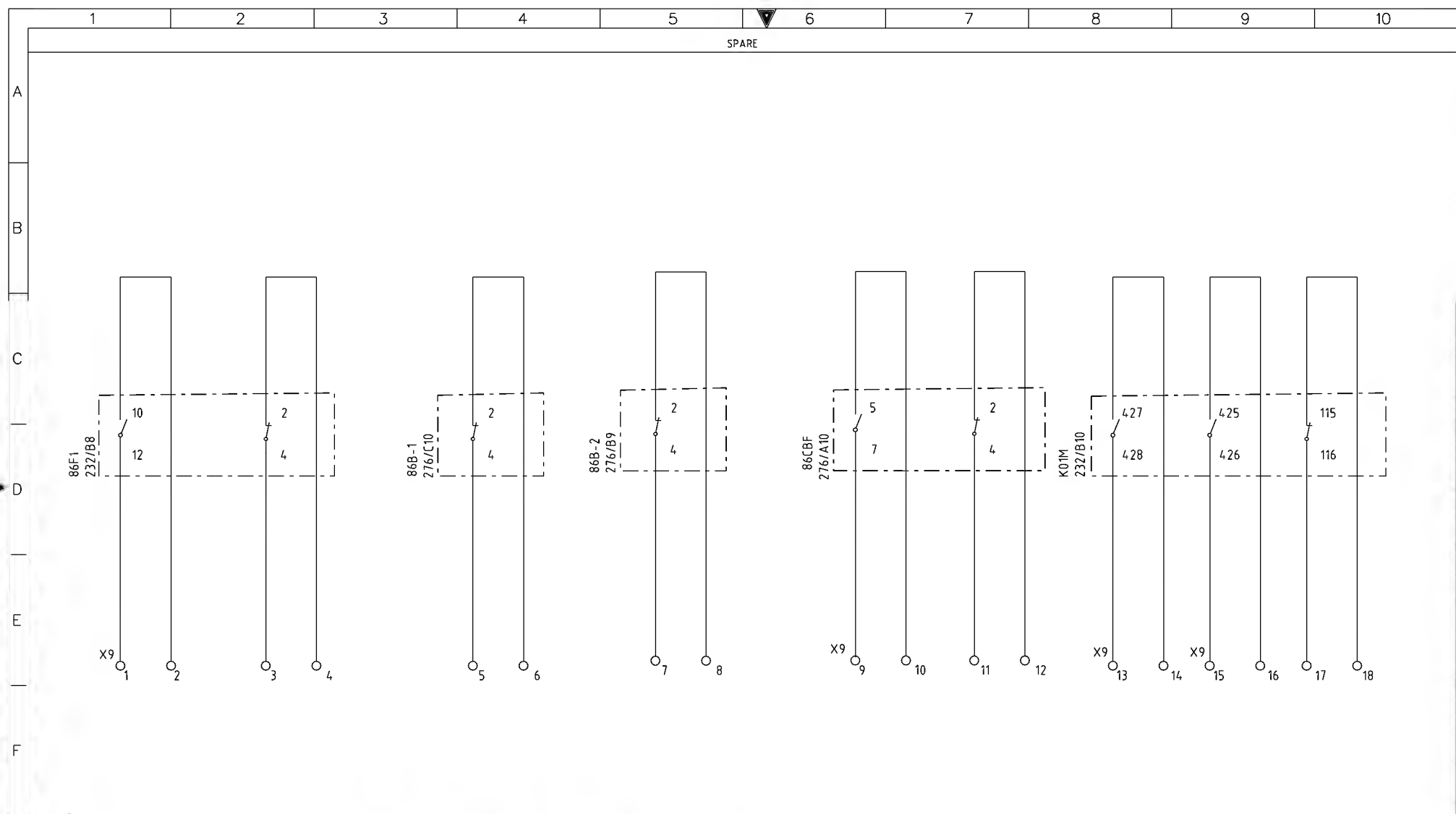
G	AS-BUILT BY _____ DATE _____		CONTRACT NO. I113I113/00	JOB ORDER NO. S-13656	CLOSE BLOCK CIRCUIT		<div>نقل الكهرباء</div> <div>الشركة الوطنية لنقل الكهرباء</div> <div></div> <div>National Grid sa</div>				
			DRAWN BY RIZ	CHECKED BY KVR	132kV UGF-8710 RELAY PANEL-1 +R03.1						
			DATE STARTED 24.01.2013	DATE COMPLETED _____	S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO. SHT	CONT.
	FOR APPROVAL		OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC	RIYADH SAUDI ARABIA		-	C421	CD-322919	293	294
	REV. NO.	DATE	DESCRIPTION								00

-   C421	CD-322919	SHEET NO.		REV. NO.
		SHT   CONT.	293   294	

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



AS-BUILT BY _____ DATE _____		CONTRACT NO. I113I113/00	JOB ORDER NO. S-13656	COMMON ALARM CIRCUITS		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
		DRAWN BY: RIZ CHECKED BY: KVR		132kV UGF-8710 RELAY PANEL-1 +R03.1		National Grid sa			
		DATE STARTED: 24.01.2013 DATE COMPLETED: _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
		PRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		-	C421	CD-322919	294   295
REV. NO.	DATE	DESCRIPTION							
00	13 04	FOR APPROVAL							

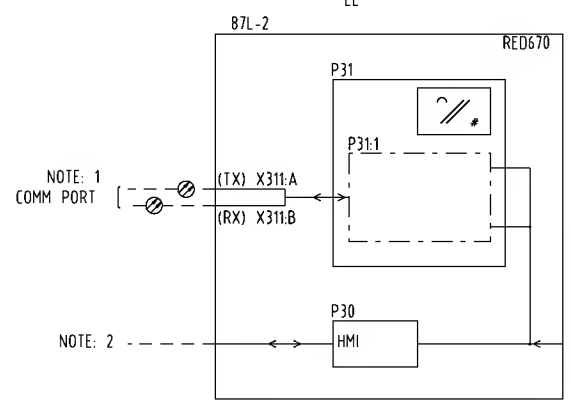
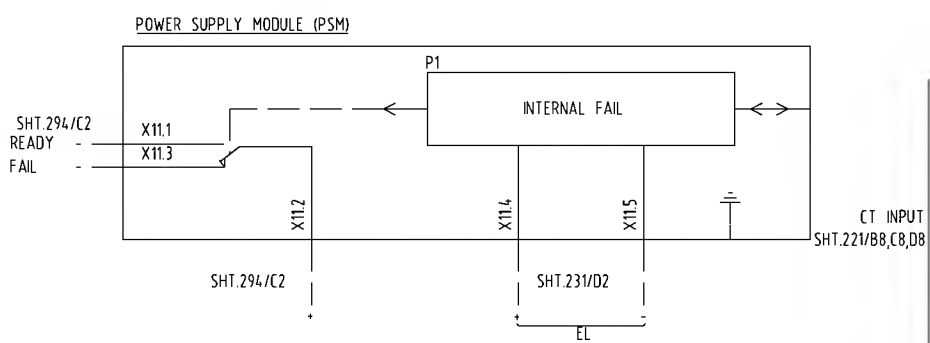


+R03.1																					
AS-BUILT BY _____		DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		SPARE CONTACTS		132kV UGF-8710 RELAY PANEL-1 +R03.1		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		National Grid sa					
				DRAWN BY RIZ		CHECKED BY KVR		12kV S/S 8709-132/13.8KV IN AL-KHARJ CITY		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX		PLANT NO. C421		DRAWING NUMBER CD-322919		SHEET NO. 295		REV. NO. 00	
00		13 04		DATE STARTED 24.01.2013		DATE COMPLETED _____		RIYADH		SAUDI ARABIA		-		C421		CD-322919		295		00	
REV. NO.		DATE		DESCRIPTION		OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC													

1 2 3 4 5 6 7 8 9 10

A  
B  
C  
D  
E  
F

B7L-1

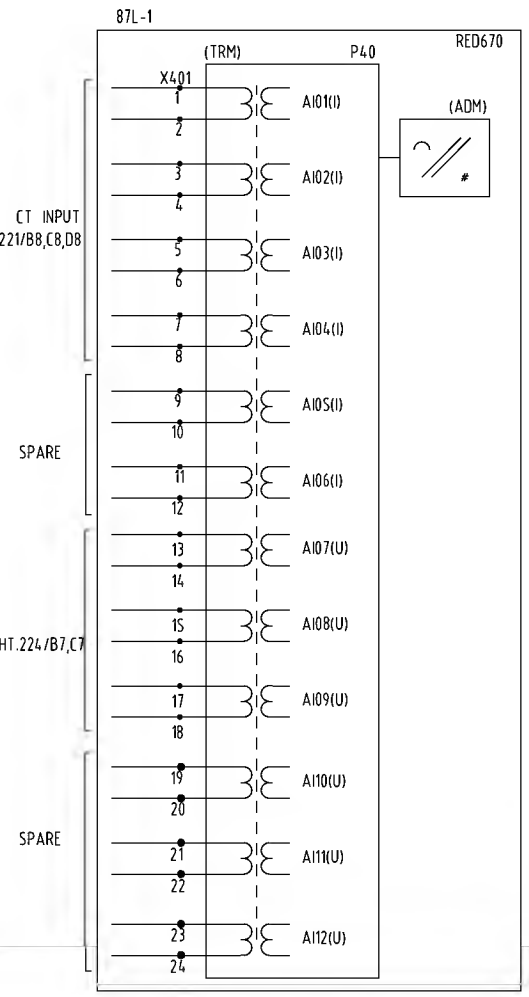


ABBREVIATIONS

- TRM TRANSFORMER INPUT MODULE
- ADM A/D CONVERSION MODULE
- PSM POWER SYPLY MODULE
- IOM BINARY IN/OUT MODULE
- BOM BINARY OUTPUT MODULE
- HMI HUMAN MACHINE INTERFACE
- BIM BINARY INPUT MODULE

- USED FOR TRIP ISOLATION (RTXP-24)
- USED FOR VOLTAGE (RTXP-24)
- USED FOR CT ISOLATION (RTXP-24)

- NOTE:
- 1. OPTICAL ETHERNET MODULE 2 GLASS INTERFACES - IEC 61850
  - 2. FRONT COMMUNICATION PORT, ETHERNET, RJ45 CONNECTORL



AS-BUILT BY _____		DATE _____	CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656
			DRAWN BY RIZ	CHECKED BY KVR
			DATE STARTED 24.01.2013	DATE COMPLETED _____
			FOR APPROVAL	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC
00	13 04			

BLOCK REFERENCE	
132kV UGF-8710 RELAY PANEL-1 +R03.1	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH SAUDI ARABIA	

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
National Grid sa		National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
-	C421	CD-322919	SHT (CONT.)
			REV. NO.
			00



1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	----

B7L-1

		87L-1	BINARY INPUT CARO	BIM P3 RED670
		LOCATION=P3		
		PLANT ADAPTED CONFIGURATION		
SHT.231/D3	{ + -	X31		
	- -	1	BI.01	// CB ON
	- -	2		
SHT.231/D3	{ + -	3	BI.02	// CB OFF
	- -	4		
SHT.231/D4	{ + -	5	BI.03	// 104 ON
	- -	6		
SHT.231/D4	{ + -	7	BI.04	// 106 ON
	- -	8		
SHT.231/O5	{ + -	9	BI.05	// VT MCB TRIP
	- -	10		
SHT.231/O5	{ + -	11	BI.06	// CB READY
	- -	12		
SHT.231/O6	{ + -	13	BI.07	// 86F1 OPTD.
	- -	14		
SHT.231/D7	{ + -	15	BI.08	// 85R1 OPTD.
	- -	16		
		X32		
	+ -	1	BI.09	// 86CBF OPTD.
	- -	2		
	+ -	3	BI.10	// 86B-1 OPTD.
	- -	4		
	+ -	5	BI.11	// 86B-2 OPTD.
	- -	6		
SHT.231/O8,D9,D10	{ + -	7	BI.12	// 86F2 OPTD.
	- -	8		
	+ -	9	BI.13	// 86BU OPTD.
	- -	10		
	+ -	11	BI.14	// 85R2 OPTD.
	- -	12		
	+ -	13	BI.15	// FPFM OUT
	- -	14		
SPARE	{ + -	15	BI.16	// SPARE
	- -	16		

		87L-1	BINARY INPUT CARO	BIM PS RED670	
		LOCATION:PS			
		PLANT ADAPTED CONFIGURATION			
SHT.291/C8,C9	+ -	XS1			
	- -	1	BI.01	//	TSR
	- -	2			
	+ -	3	BI.02	//	TSR
	- -	4			
	+ -	5	BI.03	//	SPARE
	- -	6			
	+ -	7	BI.04	//	SPARE
	- -	8			
	+ -	9	BI.05	//	SPARE
	- -	10			
	+ -	11	BI.06	//	SPARE
	- -	12			
	+ -	13	BI.07	//	SPARE
	- -	14			
	+ -	15	BI.08	//	SPARE
- -	16				
SPARE	+ -	XS2			
	- -	1	BI.09	//	SPARE
	- -	2			
	- -	3	BI.10	//	SPARE
	- -	4			
	+ -	5	BI.11	//	SPARE
	- -	6			
	+ -	7	BI.12	//	SPARE
	- -	8			
	+ -	9	BI.13	//	SPARE
	- -	10			
	+ -	11	BI.14	//	SPARE
	- -	12			
	+ -	13	BI.15	//	SPARE
	- -	14			
	+ -	15	BI.16	//	SPARE
- -	16				

AS-BUILT BY _____			DATE _____		CONTRACT NO. I1131113/00		JOB ORDER NO. S-13656		BLOCK REFERENCE			نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid sa												
					DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-1 +R03.1															
					DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY															
00			13 04		FOR APPROVAL				RIYADH			SAUDI ARABIA			INDEX		PLANT NO.		DRAWING NUMBER		SHEET NO.		REV. NO.	
REV. NO.			DATE		DESCRIPTION		OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC					-		C421		CD-322919		299   300		00		



	1	2	3	4	5	6	7	8	9	10
A										
B										
C										
D										
E										
F										

REFERENCE	X1 CT CKT.
221/C5	1
221/C5	2
221/C5	3
221/C5	4
221/D5	5
221/D5	6
221/D5	7
221/D5	8
221/D5	9
SPARE	10

REFERENCE	XTJ T. JACK
211/D3	1
211/D3	2
211/D3	3
211/D3	4
SPARE	5

REFERENCE	XSH SPACE HEATER
211/E6	1
211/F6	2
SPARE	3

REFERENCE	X6 ALM. CKT.
212/C5	1
212/C5	2
294/E1	3

REFERENCE	X2 VT CKT.
222/B4	1
222/B4	2
222/C4	3
222/C4	4
SPARE	5

REFERENCE	X3 AC CKT.
211/A3	1
211/C3	2
211/A3	3
211/C3	4
211/B3	5
211/C3	6
211/B3	7
211/C3	8
SPARE	9
SPARE	10

REFERENCE	X61 ALM. CKT.
212/E5	1
212/E5	2
294/E1	3
294/E2	4
294/E4	5
294/E6	6
294/E6	7
294/E7	8
294/E7	9
SPARE	10
SPARE	11
SPARE	12
SPARE	13
SPARE	14
SPARE	15

REFERENCE	X41 DC CKTS.
216/B3	1
216/B3	2
216/B3	3
216/C3	4
216/C3	5
216/C3	6
216/C7	7
216/C7	8
216/C7	9
216/C7	10
216/D3	11
216/D3	12
216/D7	13
216/D7	14
216/D7	15
216/D7	16
216/E3	17
216/E3	18
SPARE	19
SPARE	20
231/B3	21
231/B4	22
231/B4	23
231/B5	24
231/B5	25
231/B6	26
231/B8	27
231/B9	28
SPARE	29
SPARE	30
SPARE	31

REFERENCE	X51 CON & PROTIN CKTS.
216/E7	1
216/E7	2
231/D3	3
231/D4	4
231/D4	5
231/D5	6
231/D6	7
231/D6	8
231/D6	9
231/D7	10
231/D8	11
SPARE	12
SPARE	13
SPARE	14
276/A2	15
276/F2	16
276/A7	17
276/F7	18
276/A2	19
276/E2	20
276/A4	21
276/E4	22
276/A5	23
276/E5	24
276/E5	25
277/F4	26
277/F4	27
277/F7	28
277/A5	29
277/F5	30
291/A4	31
291/C4	32
291/E4	33
291/A6	34
291/C6	35
291/A7	36
291/C7	37
291/A8	38
291/B8	39
291/A10	40
291/B10	41
292/B1	42
292/F1	43
292/B2	44
292/F2	45
292/B3	46
292/F3	47
292/B4	48
292/B5	49
292/F5	50

REFERENCE	X51 CON & PROTIN CKTS.
292/B6	51
292/B7	52
292/F7	53
292/BB	54
292/B9	55
292/F9	56
292/B10	57
292/F10	58
293/B4	59
293/E4	60
SPARE	61
SPARE	62
SPARE	63
SPARE	64
SPARE	65

REFERENCE	X9 SPARE
295/E1	1
295/E1	2
295/E2	3
295/E2	4
295/E4	5
295/E4	6
295/E5	7
295/E5	8
295/E6	9
295/E6	10
295/E7	11
296/E7	12
295/E8	13
295/E8	14
295/E9	15
295/E9	16
SPARE	17
SPARE	18
SPARE	19
SPARE	20

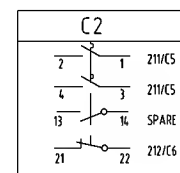
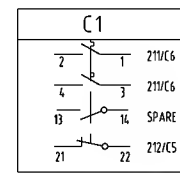
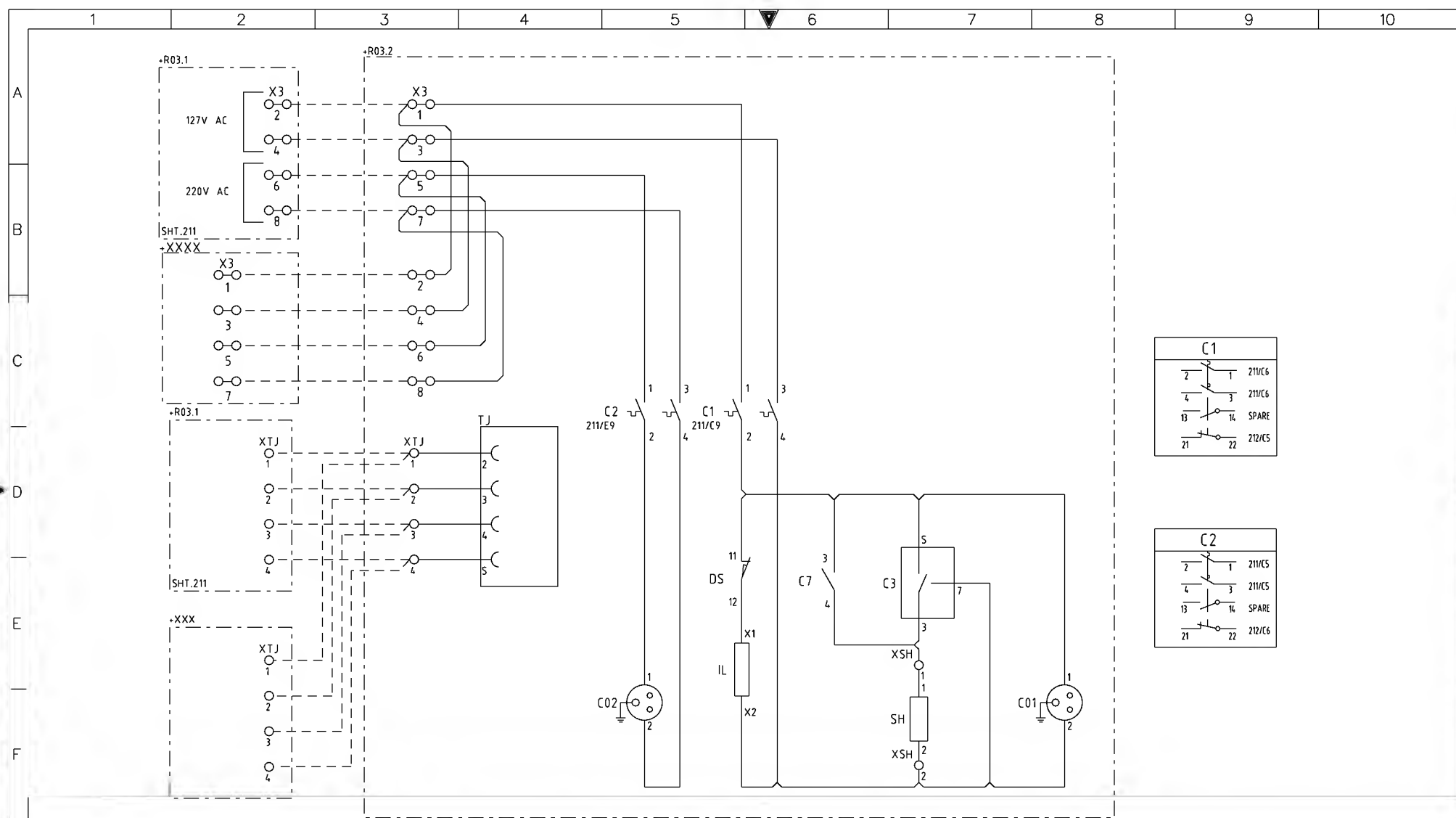
AS-BUILT BY	DATE	CONTRACT NO. I1131113/00	JOB ORDER NO. S-13656
DRAWN BY RIZ		CHECKED BY KVR	
DATE STARTED 24.01.2013		DATE COMPLETED	
PRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC	

00	13 04	FOR APPROVAL
REV. NO.	DATE	DESCRIPTION

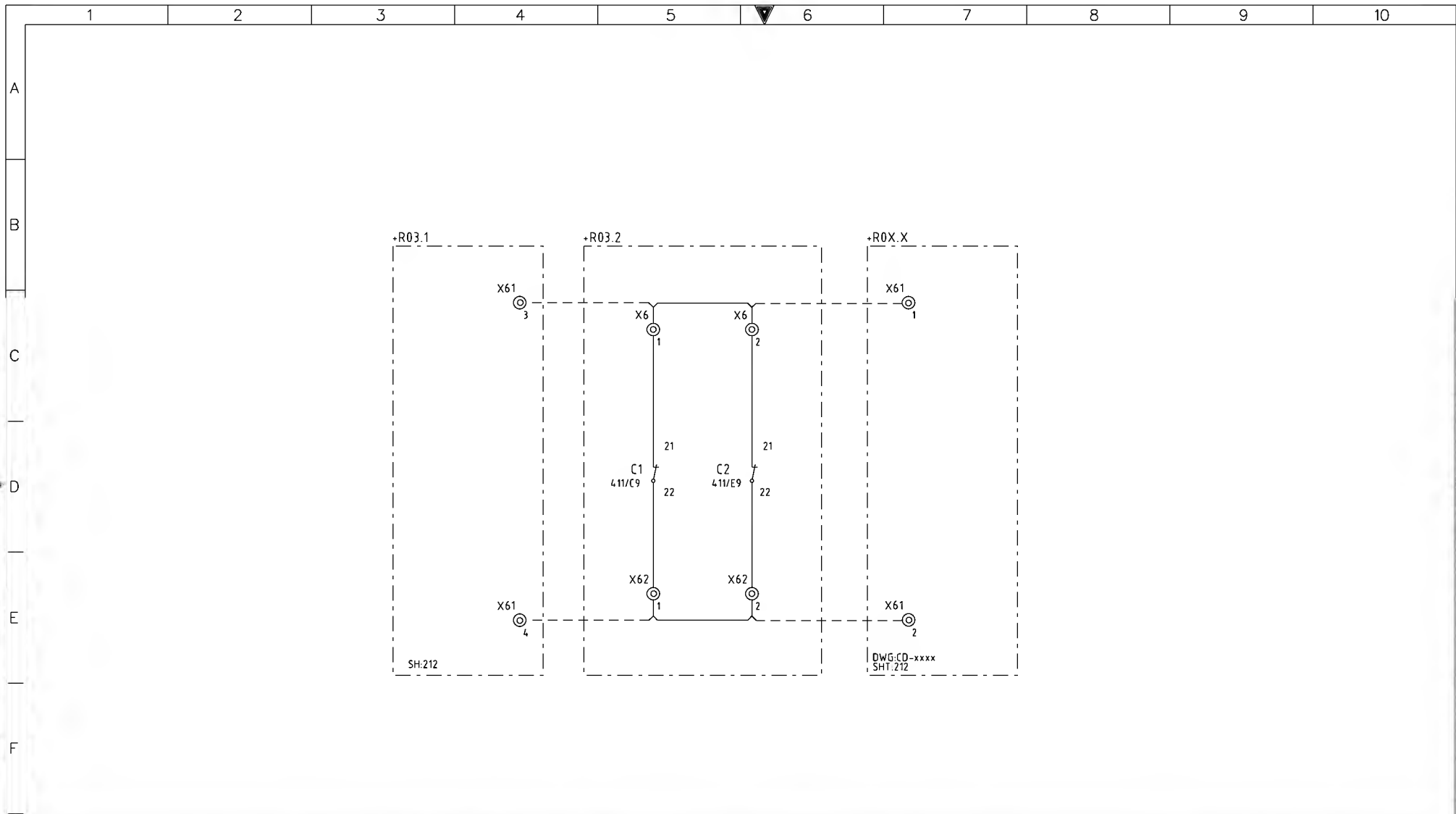
TERMINAL BLOCKS PANEL +R01.1  
 132kV UGF-8710 RELAY PANEL-1 +R03.1  
 S/S 8709-132/13.8KV IN AL-KHARJ CITY  
 RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
National Grid sa		National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
-	C421	CD-322919	301/411
			REV. NO.
			00



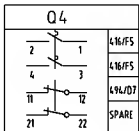
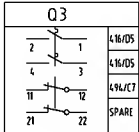
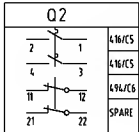
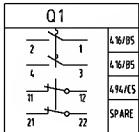
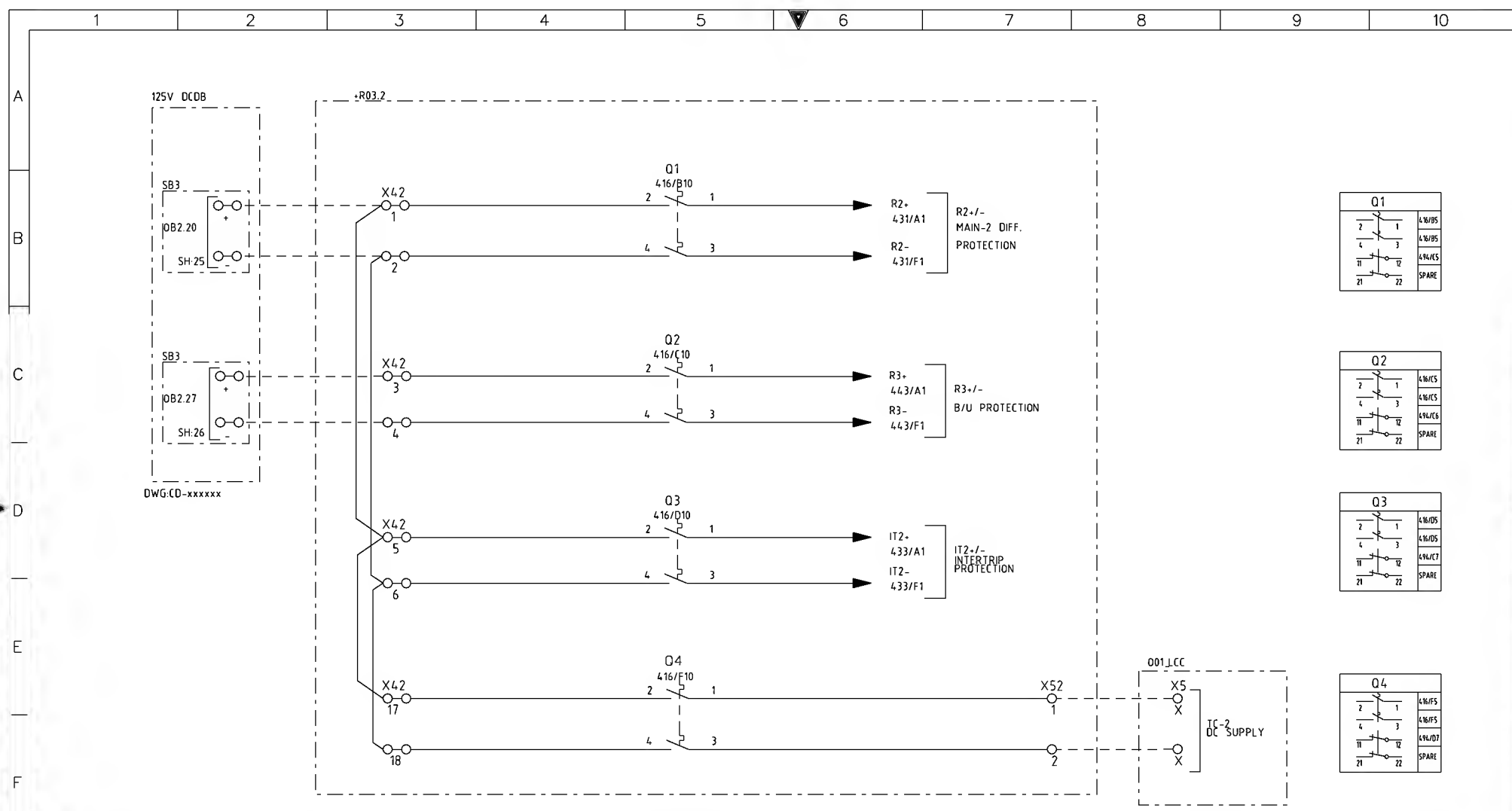
AS-BUILT BY _____ DATE _____		CONTRACT NO. I1131113/00	JOB ORDER NO. S-13656	AC SUPPLY FOR ILLUMINATION & POWER SOCKET		<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">الشركة الوطنية لنقل الكهرباء</div> <div style="text-align: center;">   <b>نقل الكهرباء</b>  National Grid SA </div> </div>											
DRAWN BY: RIZ CHECKED BY: KVR		DATE STARTED: 24.01.2013 DATE COMPLETED: _____		132kV UGF-8710 RELAY PANEL-1/2													
00 13 04 FOR APPROVAL		DATE STARTED: 24.01.2013 DATE COMPLETED: _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>INDEX</th> <th>PLANT NO.</th> <th>DRAWING NUMBER</th> <th>SHEET NO.</th> <th>REV. NO.</th> </tr> <tr> <td>-</td> <td>C421</td> <td>CD-322919</td> <td>411   412</td> <td>00</td> </tr> </table>		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.	-	C421	CD-322919	411   412	00
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.													
-	C421	CD-322919	411   412	00													
REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC	<div style="display: flex; justify-content: space-between;"> <span>RIYADH SAUDI ARABIA</span> <span>NG/D2-0 (2012/01)</span> </div> <div style="display: flex; justify-content: space-between;"> <span>DMS</span> <span>VECTOR</span> <span>NGD200</span> </div>											

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



AS-BUILT BY _____ DATE _____		CONTRACT NO. I1131113/00		JOB ORDER NO. S-13656		AC MCB AUX CONTACTS				
		DRAWN BY RIZ CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-2 +R03.2		نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid sa				
		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY						
00	13 04	FOR APPROVAL		RIYADH SAUDI ARABIA		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		-	C421	CD-322919	412   416	00

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

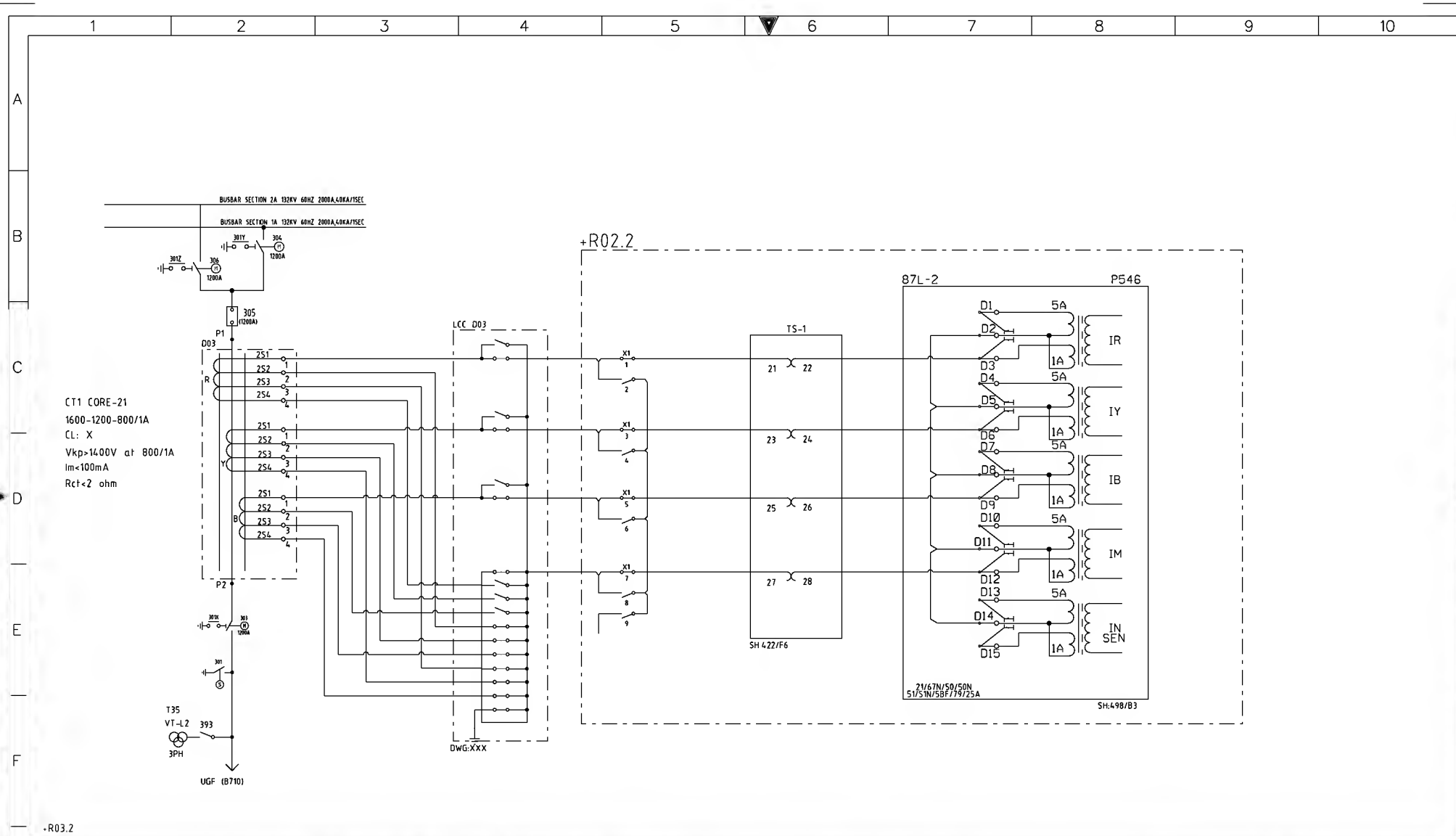



AS-BUILT BY _____ DATE _____		CONTRACT NO. I113113/00		JOB ORDER NO. S-13656		DC SUPPLY DISTRIBUTION		نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid sa	
DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-2 +R03.2		INDEX		PLANT NO.	
DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		DRAWING NUMBER		SHEET NO.	
PRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		CD-322919		416/421	
REV. NO. 00		DATE 13 04		DESCRIPTION FOR APPROVAL		REV. NO.		REV. NO.	

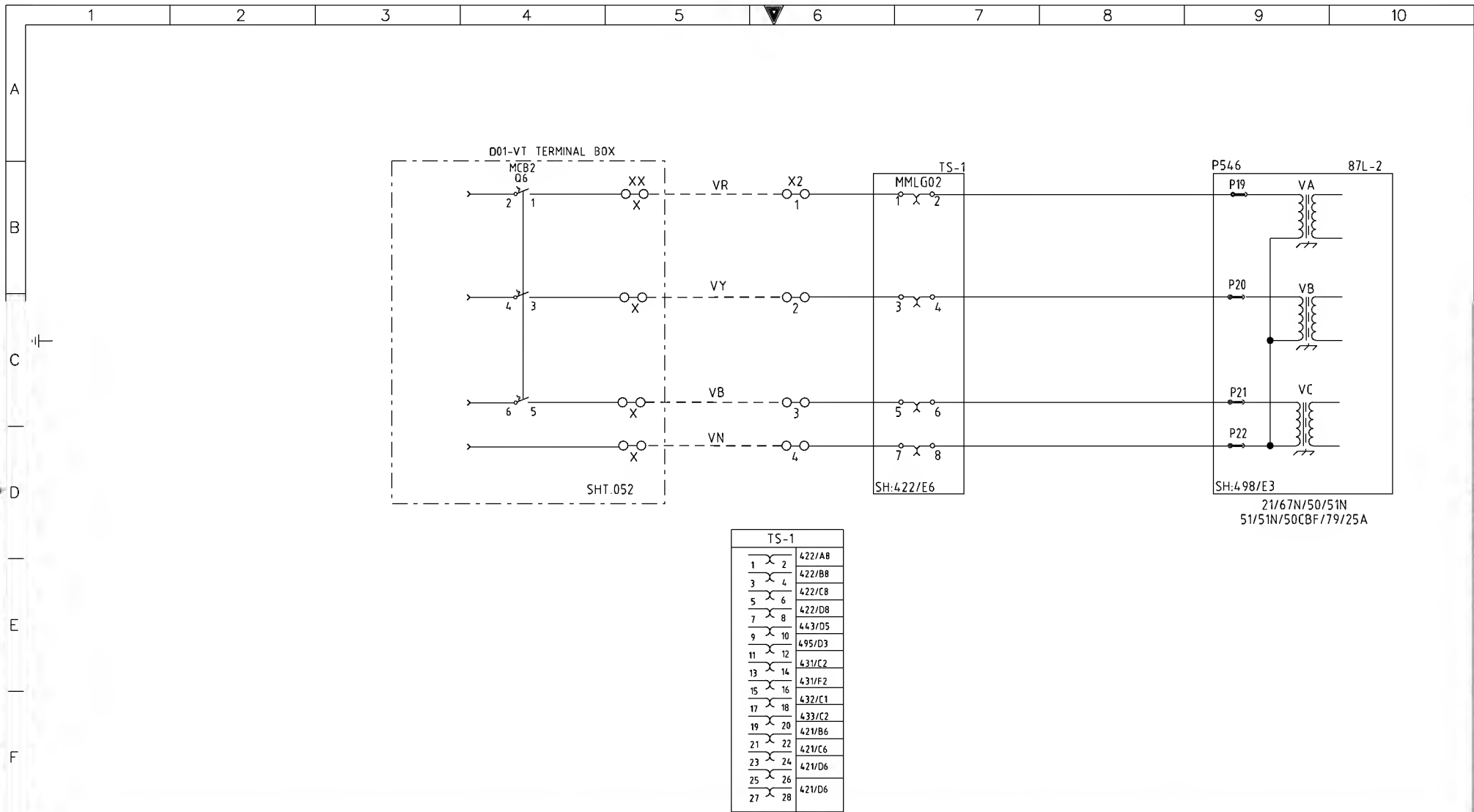
NG/D2-0 (2012/01)

DMS VECTOR NGD200

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



G	AS-BUILT BY _____		DATE _____	CONTRACT NO. I113113/00	JOB ORDER NO. S-13656	CURRENT TRANSFORMER INPUTS -87L-2		<div>الشركة الوطنية لنقل الكهرباء</div> <div> <b>نقل الكهرباء</b> National Grid sa</div>				
					DRAWN BY <u>  RIZ  </u> CHECKED BY <u>  KVR  </u>	132kV UGF-8710 RELAY PANEL-2 +R03.2						
					DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____	S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER		
	00		13 04	FOR APPROVAL		OPRG. DEPT. <u>  CTPD  </u> ENG. DEPT. <u>  AUT-PSAC  </u>	RIYADH SAUDI ARABIA		-	C421	CD-322919	
REV. NO.		DATE		DESCRIPTION						SHEET NO.		REV. NO.
										SHT CONT.		
										421 422		00
										NG/D2-0 (2012/0		
										DMS		NGD20
										VECTOR		



AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. I113I113/00 JOB ORDER NO. S-13656

DRAWN BY RIZ CHECKED BY KVR  
DATE STARTED 24.01.2013 DATE COMPLETED \_\_\_\_\_  
PRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

VOLTAGE TRANSFORMER INPUTS -87L-2  
132kV UGF-8710 RELAY PANEL-2 +R03.2  
S/S 8709-132/13.8KV IN AL-KHARJ CITY  
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



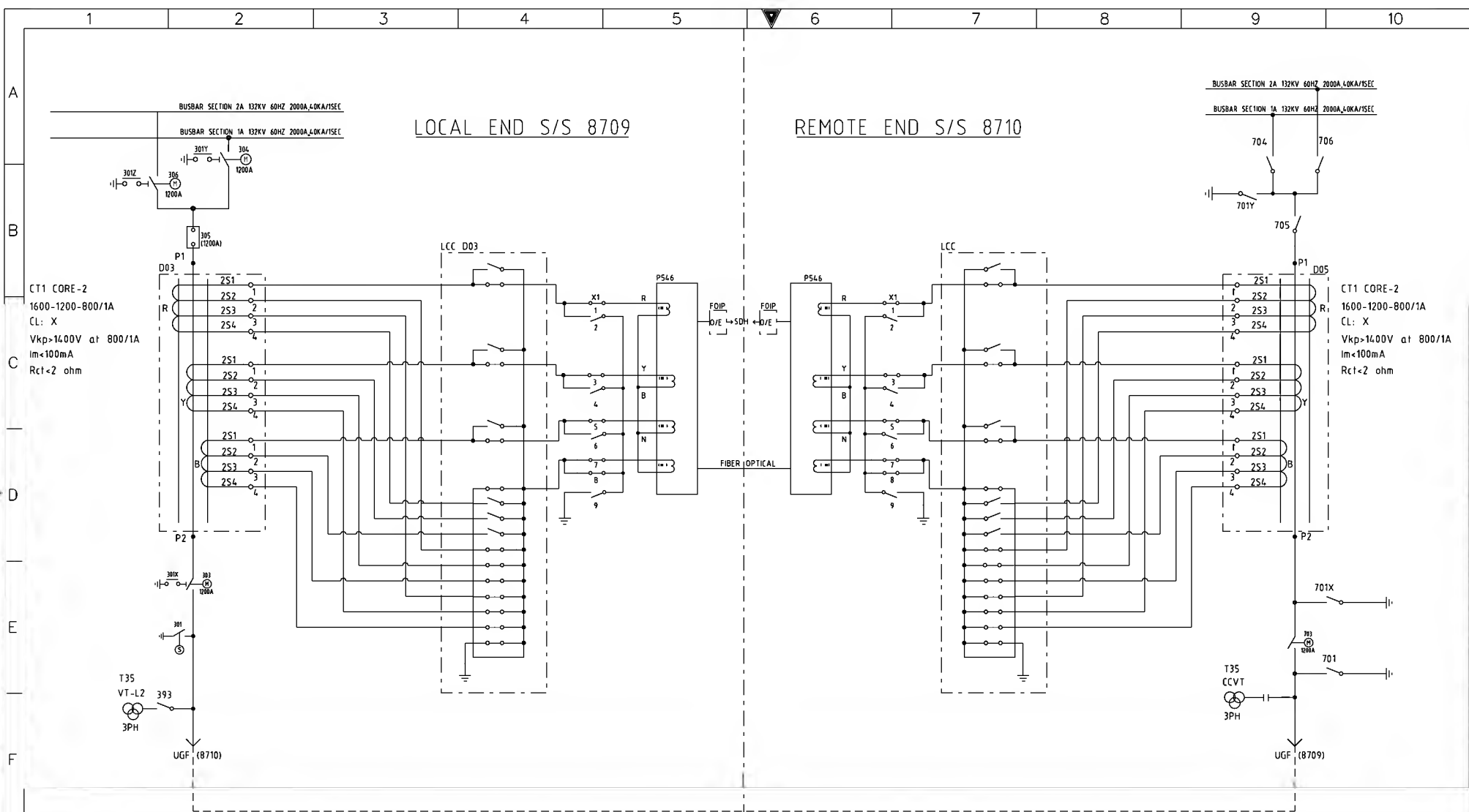
نقل الكهرباء  
National Grid SA

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322919	422/423	00

NG/D2-0 (2012/01)  
DMS VECTOR NGD200

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.





+R03.2

AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. 1113113/00 JOB ORDER NO. S-13656

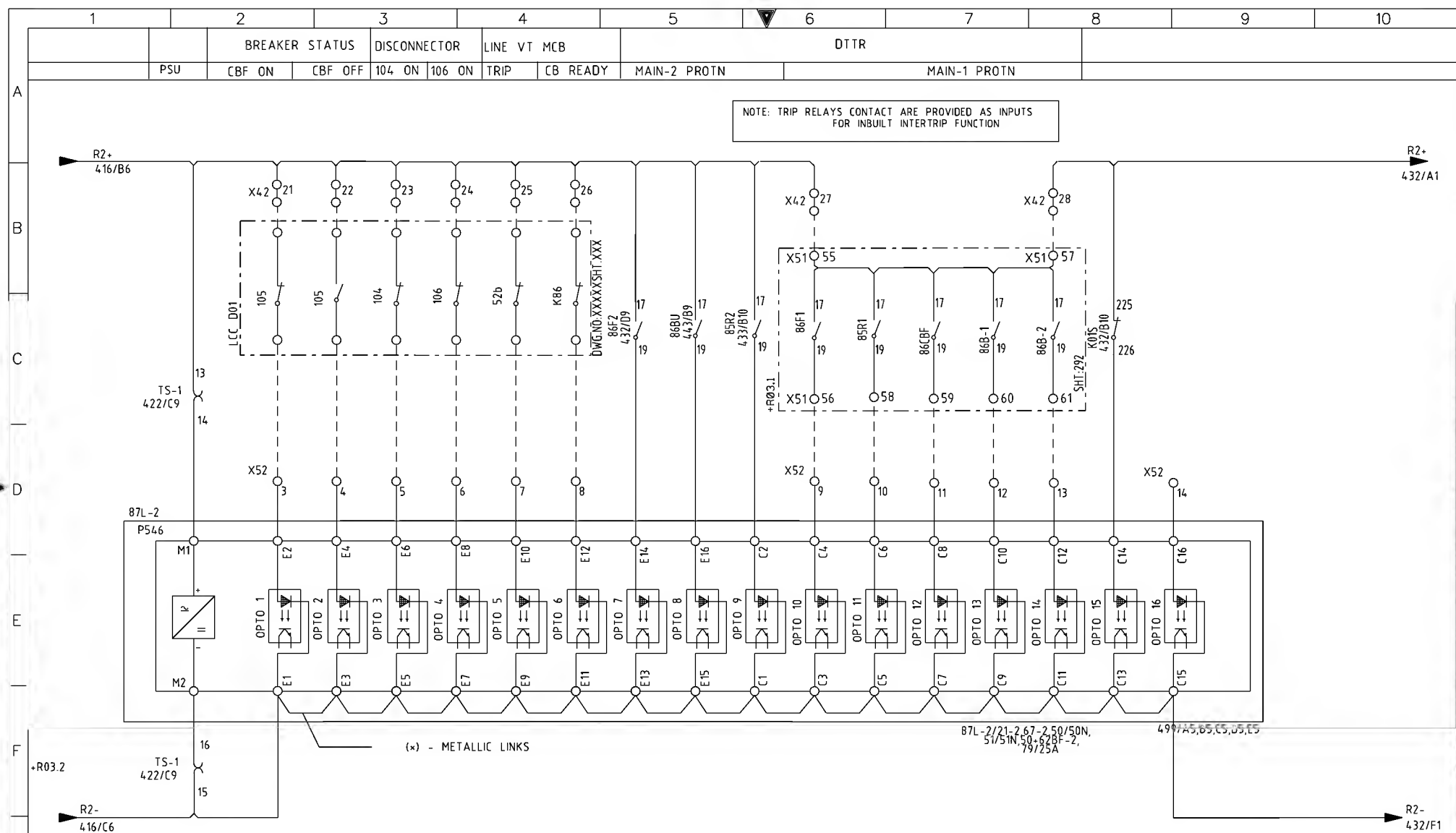
G	DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u>	
	DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____	
00	FOR APPROVAL	
	OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>	
REV. NO.	DATE	DESCRIPTION

COMMUNICATION CIRCUITS  
132kV UGF-8710 RELAY PANEL-2 +R03.2  
S/S 8709-132/13.8KV IN AL-KHARJ CITY  
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
National Grid sa		National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
-	C421	CD-322919	423/431
			REV. NO.
			00

NG/D2-D (2012/01)  
DMS VECTOR NGD200

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

DRAWN BY RIZ CHECKED BY KVR

DATE STARTED 24.01.2013 DATE COMPLETED \_\_\_\_\_

PRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

FOR APPROVAL

REV. NO. 00 DATE 13 04 DESCRIPTION

MAIN-2 PROTN. 87L-2 RELAY- BINARY INPUTS

132kV UGF-8710 RELAY PANEL-2 +R03.2

S/S 8709-132/13.8KV IN AL-KHARJ CITY

RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء

نقل الكهرباء  
National Grid sa

INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO.

- C421 CD-322919 SHT 432 00

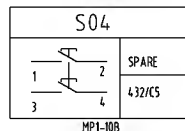
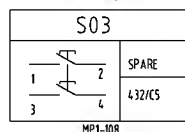
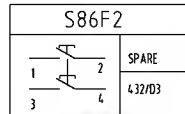
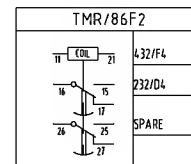
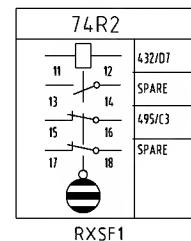
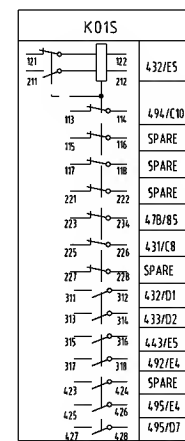
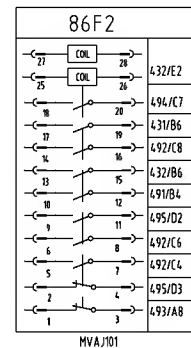
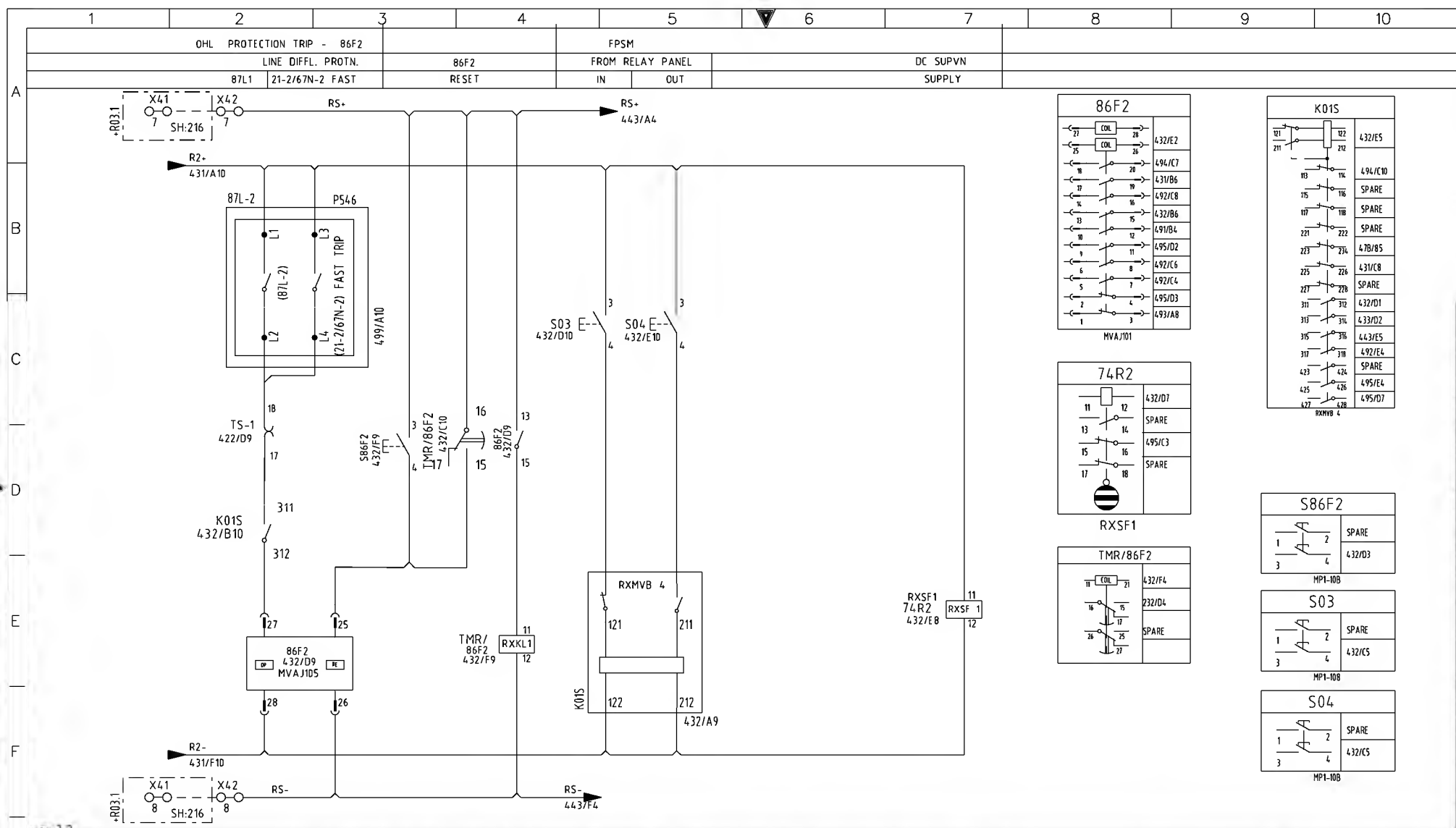
NG/D2-0 (2012/01)

DMS

VECTOR

NGD200

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

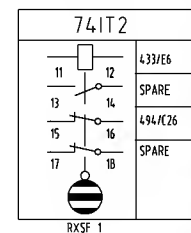
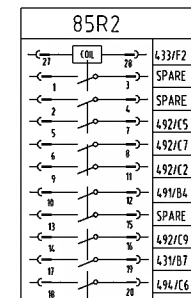
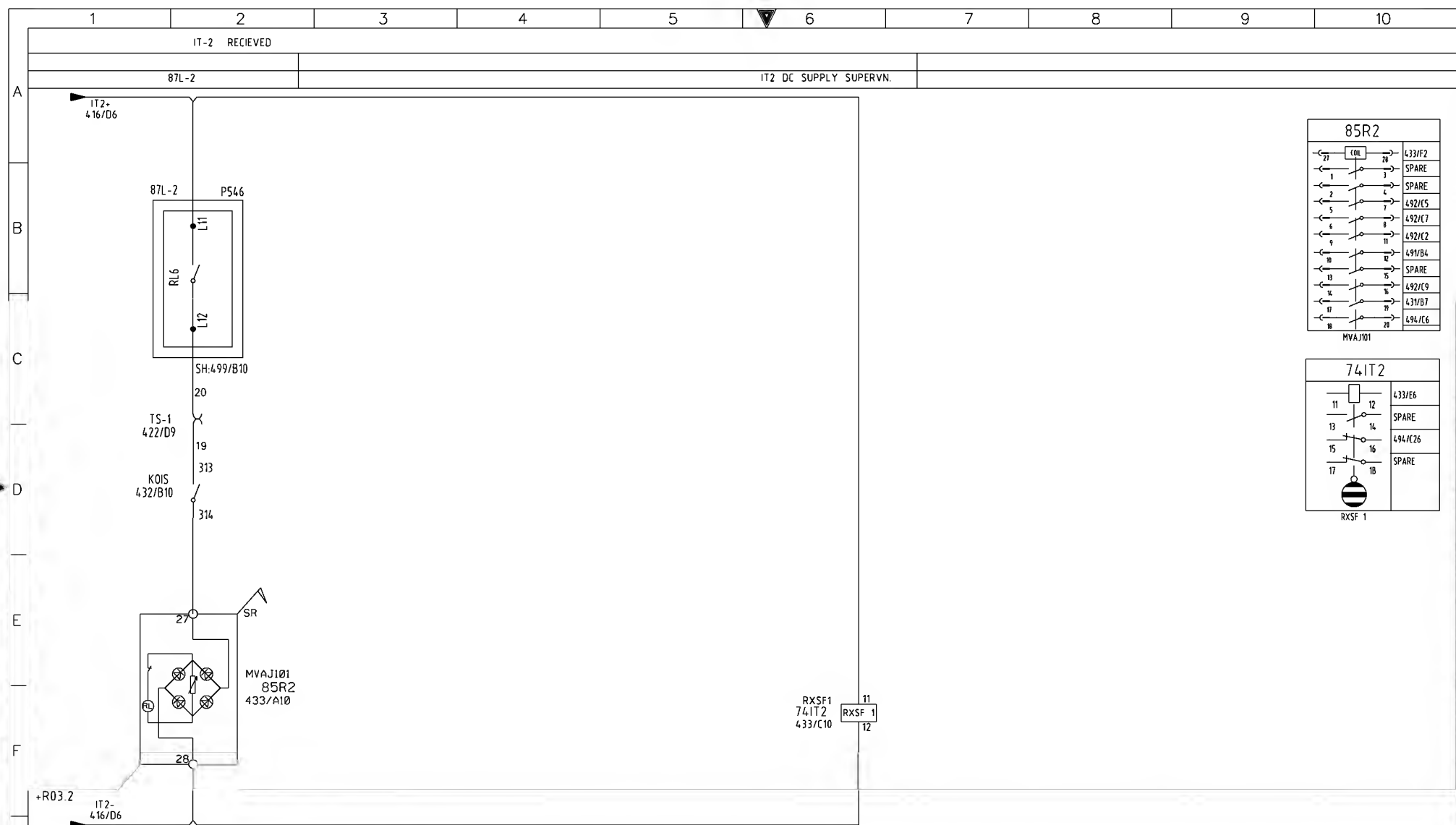


+R03.2		AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	MAIN-2 DISTANCE PROTECTION TRIP RELAY CKT.	
		DRAWN BY RIZ CHECKED BY KVR		DATE STARTED 24.01.2013 DATE COMPLETED _____		132kV UGF-8710 RELAY PANEL-2 +R03.2	
00		13 04		FOR APPROVAL		S/S 8709-132/13.8KV IN AL-KHARJ CITY	
REV. NO.		DATE		DESCRIPTION		RIYADH SAUDI ARABIA	
				OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		INDEX PLANT NO. C421	
						DRAWING NUMBER CD-322919	
						SHEET NO. 432/433	
						REV. NO. 00	

الشركة الوطنية لنقل الكهرباء  
National Grid SA

NG/D2-0 (2012/01)  
NGD200

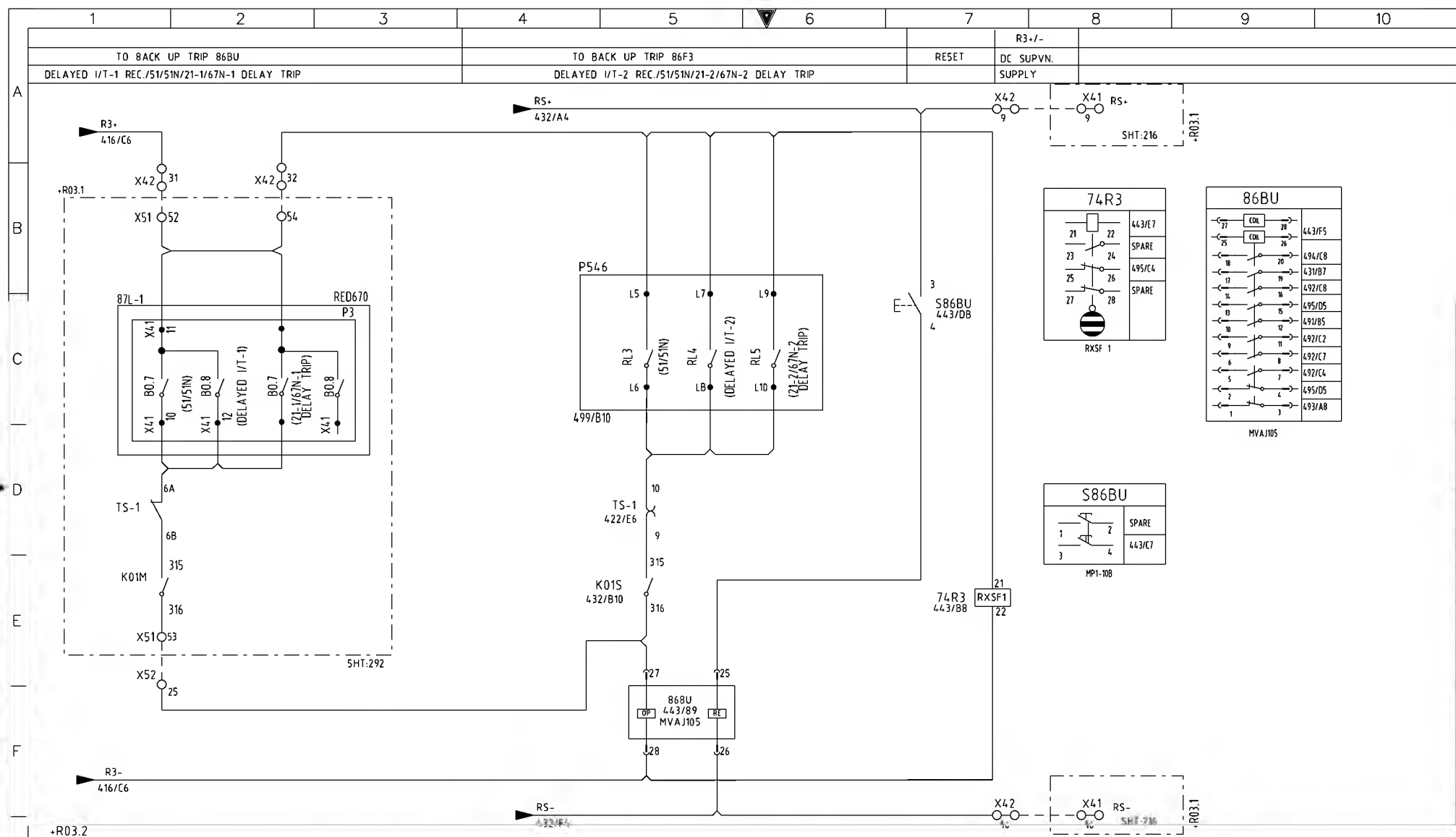
THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.




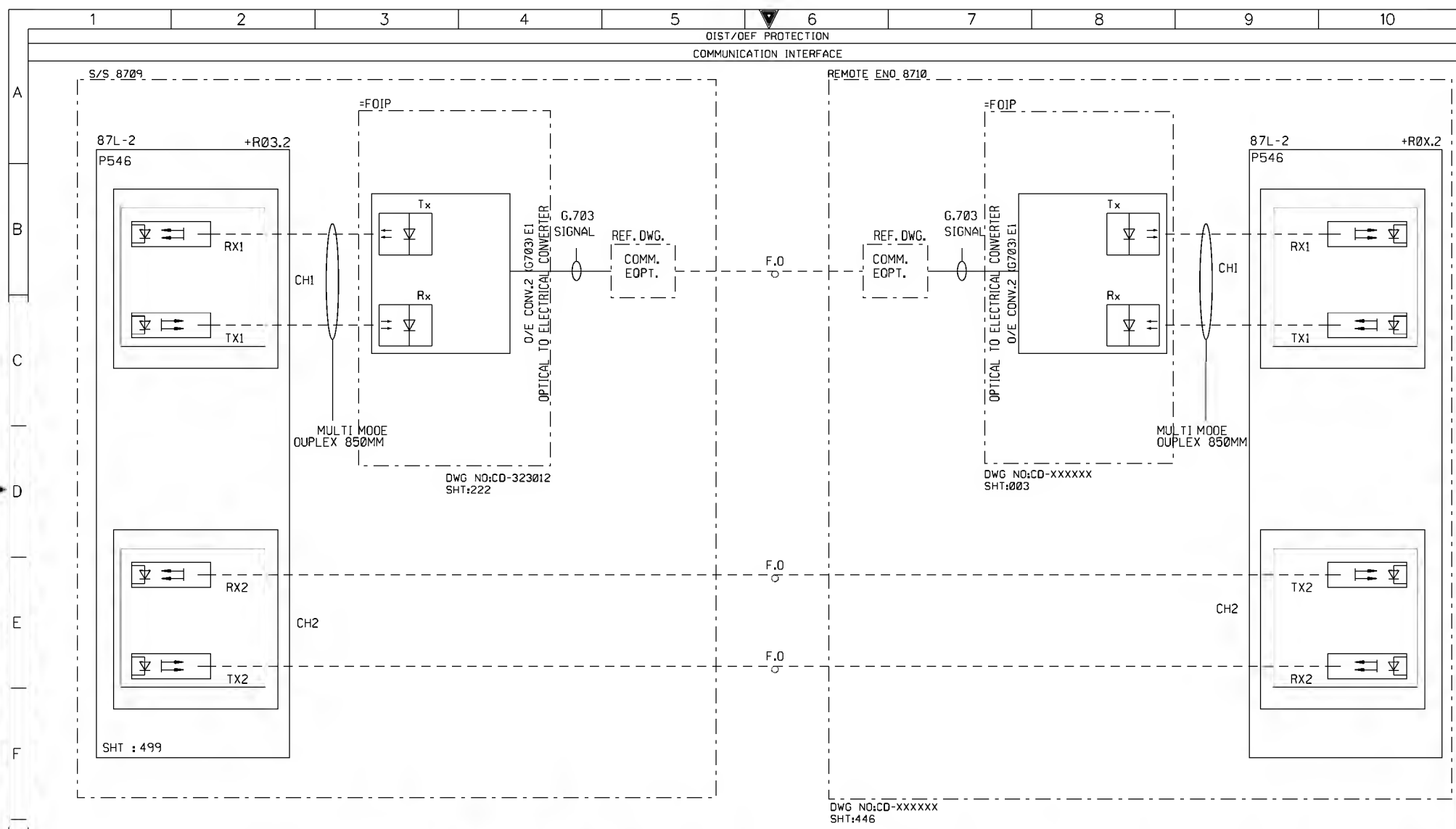
AS-BUILT BY _____ DATE _____		CONTRACT NO. I113I113/00	JOB ORDER NO. S-13656	MAIN-2 DISTANCE.PROTECTION TRIP RELAY CKT.	
DRAWN BY RIZ CHECKED BY KVR		DATE STARTED 24.01.2013 DATE COMPLETED _____		132kV UGF-8710 RELAY PANEL-2 +R03.2	
FOR APPROVAL		PRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		S/S 8709-132/13.8KV IN AL-KHARJ CITY	
REV. NO.	DATE	DESCRIPTION		RIYADH SAUDI ARABIA	
00	13 04				

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
National Grid sa		National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
-	C421	CD-322919	433/443
		SHT. CONT.	REV. NO.
			00

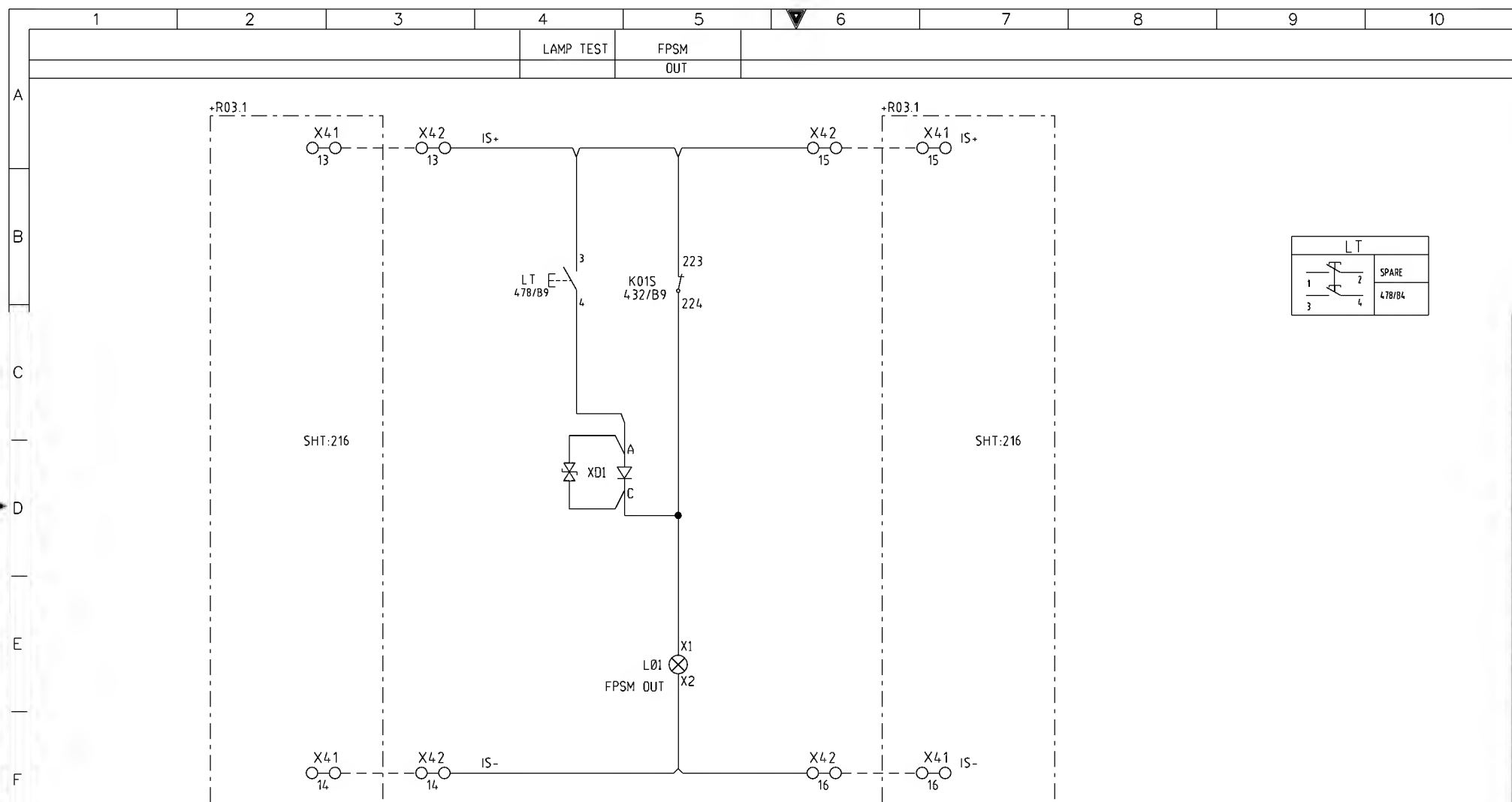
THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



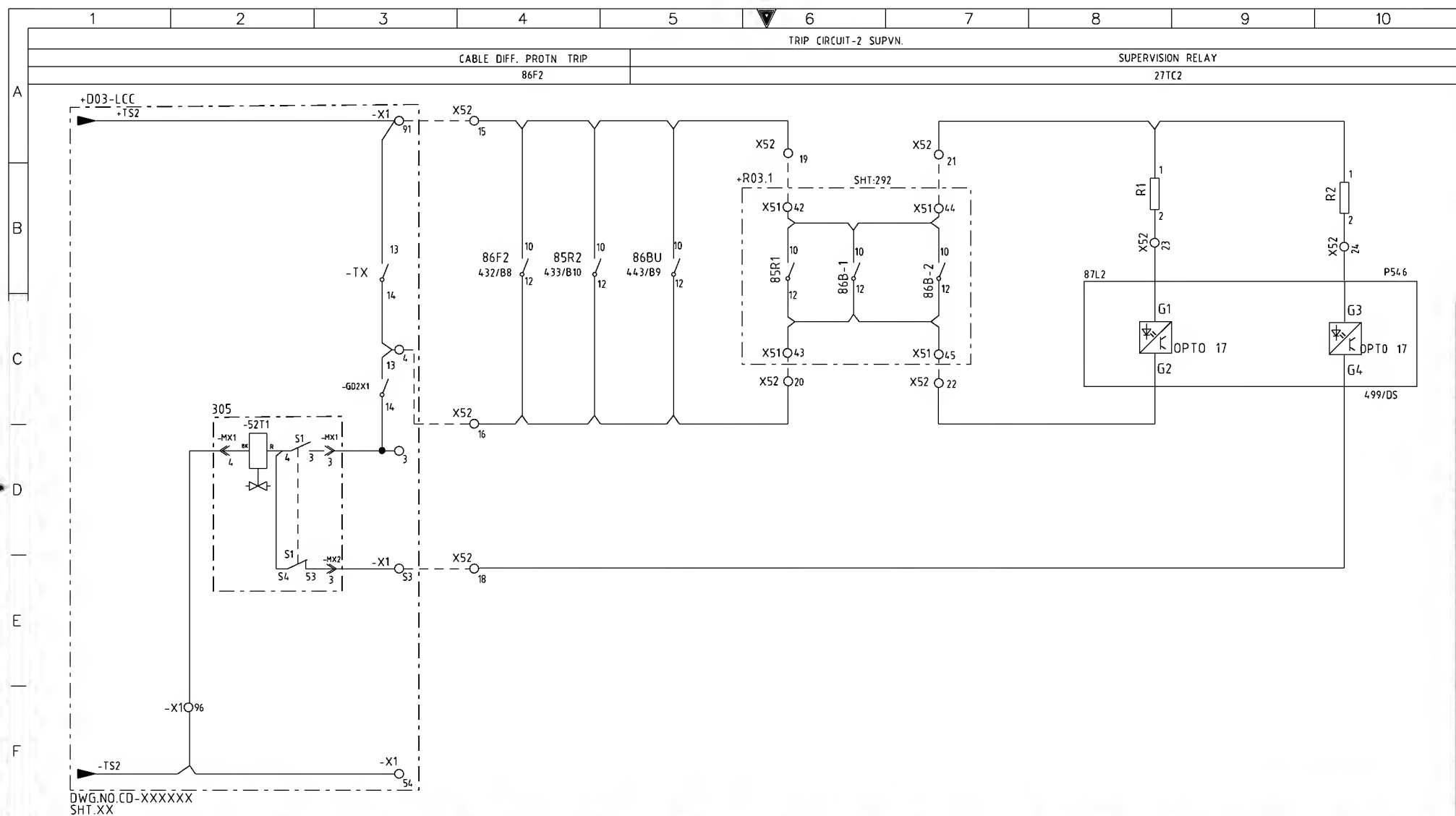
G	AS-BUILT BY _____		DATE _____	CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	BACKUP PROTECTION TRIP RELAY CIRCUIT		نقل الكهرباء			الشركة الوطنية لنقل الكهرباء		National Grid sa	
	DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-2 +R03.2		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.	REV. NO.		
	DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		-	C421	CD-322919	SHT CONT.		443/446	00	
	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA					NG/D2-0 (2012/01				
	FOR APPROVAL									VECTOR				
REV. NO.	DATE	DESCRIPTION								DMS			NGD200	



AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	COMMUNICATION INTERFACE		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
				132kV UGF-8710 RELAY PANEL-2 +R03.2		National Grid sa			
				S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
				RIYADH SAUDI ARABIA		-	C421	CD-322919	446/478
REV. NO.	DATE	DESCRIPTION		OPRG. DEPT.	ENG. DEPT.	SHT (CONT.)		REV. NO.	
00	13 04	FOR APPROVAL		CTPD	AUT-PSAC			00	



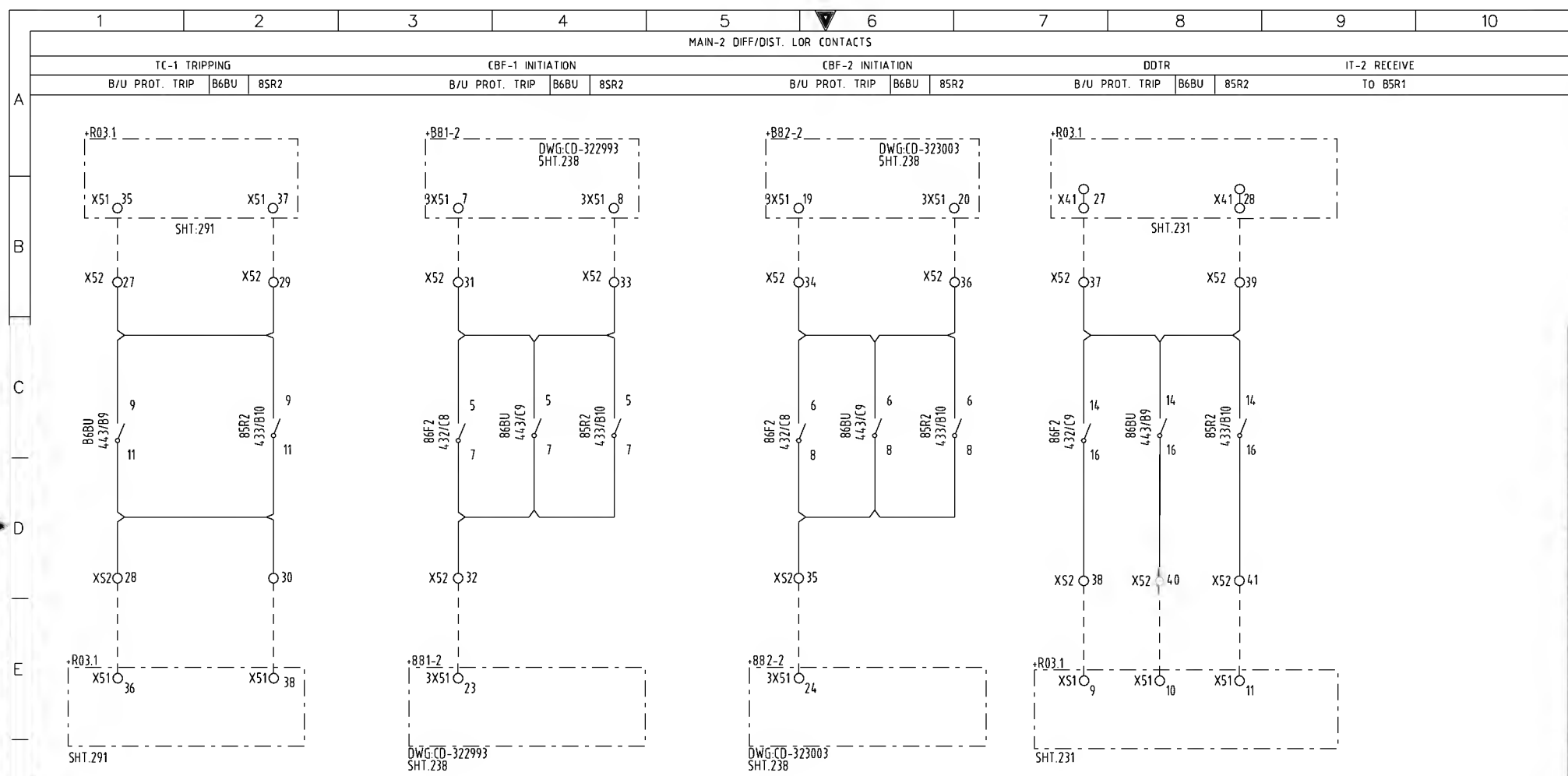
AS-BUILT BY _____ DATE _____		CONTRACT NO. 1113113/00		JOB ORDER NO. S-13656		<b>MAIN-2 INDICATION CIRCUIT</b>		<b>الشركة الوطنية لنقل الكهرباء</b>		<b>نقل الكهرباء</b>	
		DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-2 +R03.2		National Grid sa			
		DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX		PLANT NO.	
		DPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		DRAWING NUMBER		SHEET NO.	
REV. NO. 00		DATE 13 04		DESCRIPTION FOR APPROVAL				CD-322919		478   491	
										REV. NO. 00	



DWG. NO. CD-XXXXXX SHT. XX		+R03.2	
AS-BUILT BY _____ DATE _____		CONTRACT NO. I1131113/00	
		JOB ORDER NO. S-13656	
DRAWN BY RIZ		CHECKED BY KVR	
DATE STARTED 24.01.2013		DATE COMPLETED _____	
PRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC	
FOR APPROVAL		TRIP COIL-2 SUPERVSION CIRCUIT	
00		13 04	
REV. NO.		DATE	
		DESCRIPTION	
		132kV UGF-8710 RELAY PANEL-2 +R03.2	
		S/S 8709-132/13.8KV IN AL-KHARJ CITY	
		RIYADH SAUDI ARABIA	
		INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO.	
		- C421 CD-322919 491 492 00	
		NG/D2-0 (2012/01)	
		DMS VECTOR NGD200	

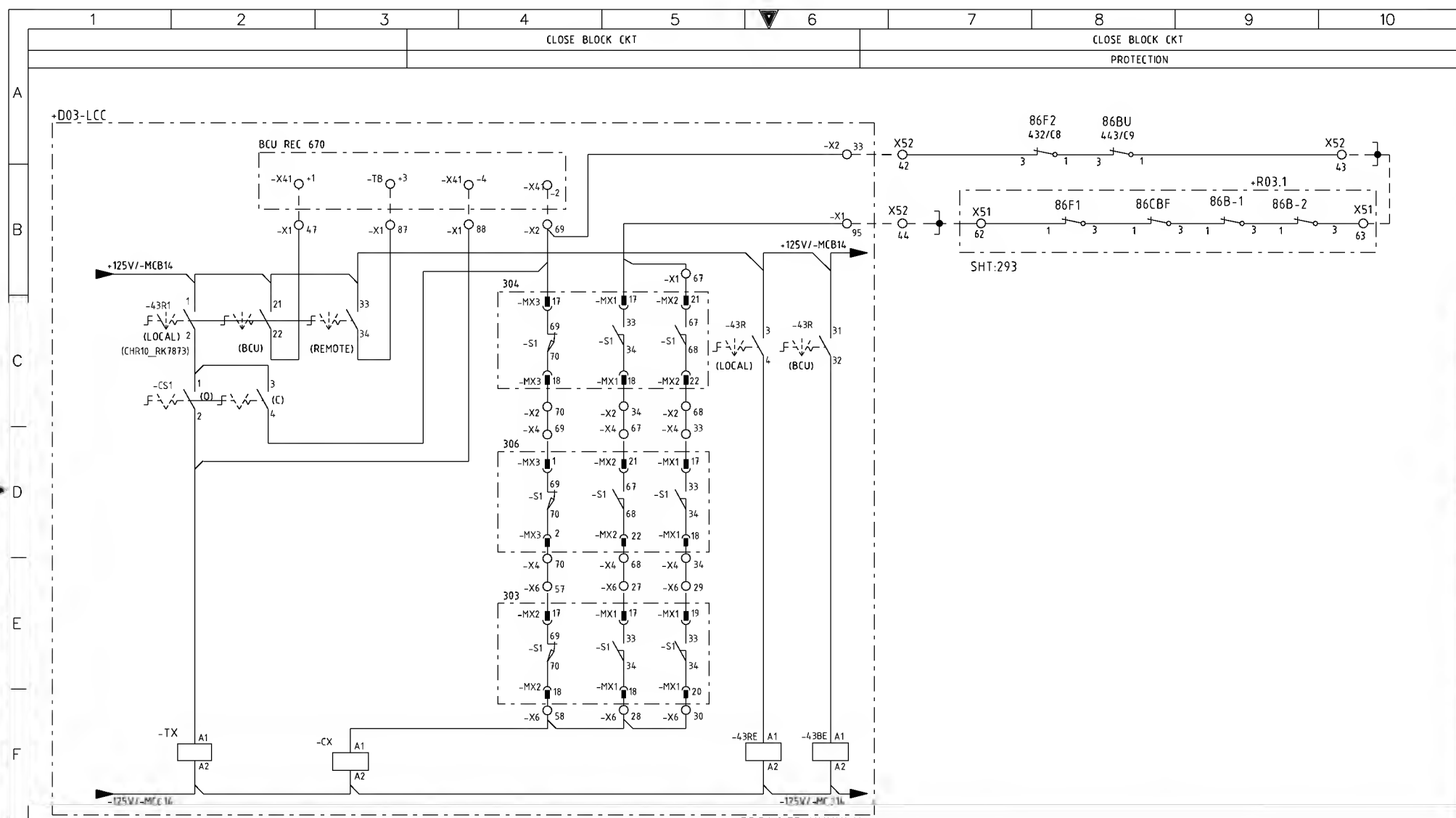
THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.





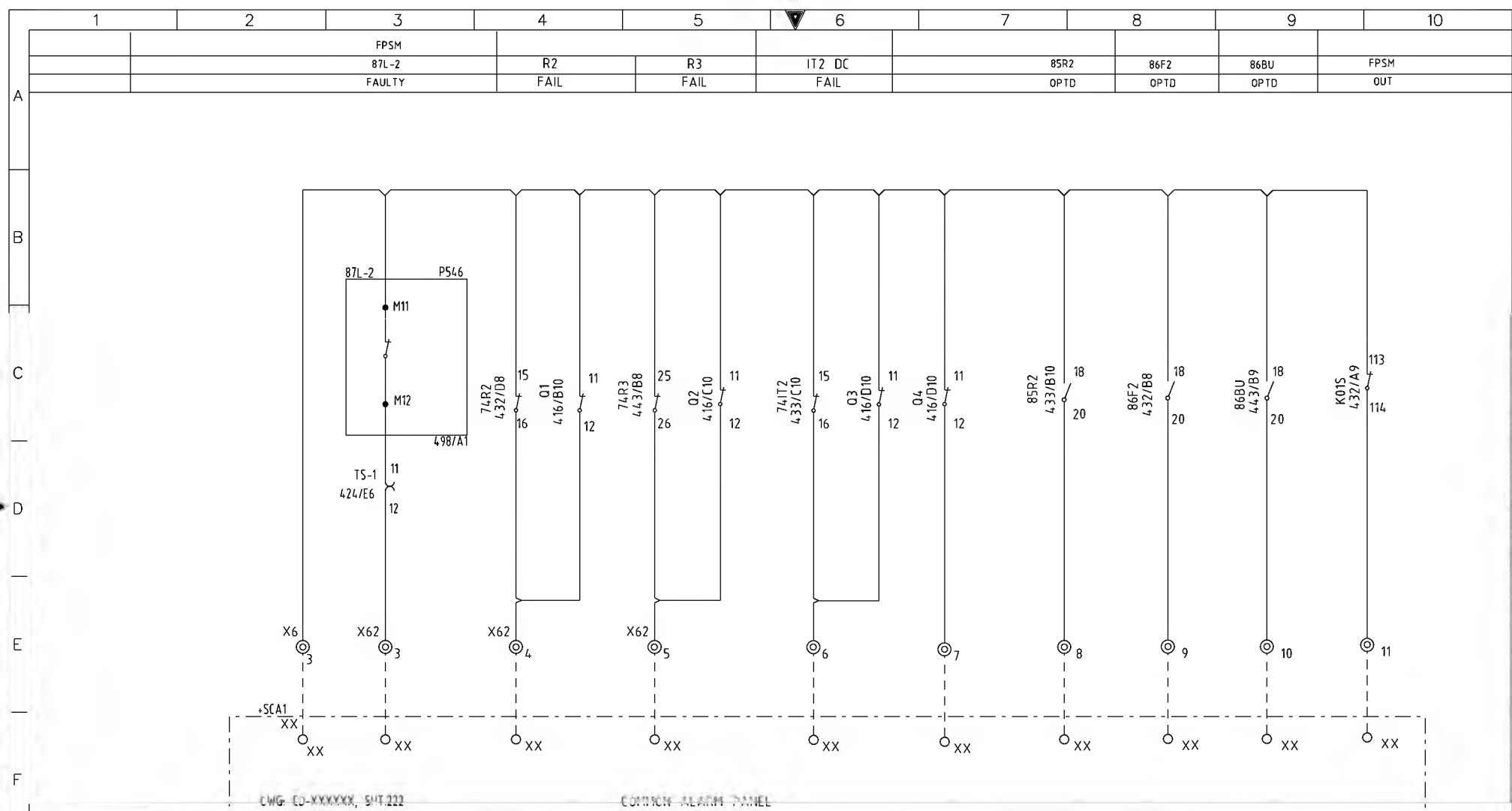
AS-BUILT BY _____		DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		TRIP COIL-1 & CBF INITIATION CONTACTS 132kV UGF-8710 RELAY PANEL-2 +R03.2 S/S 8709-132/13.8KV IN AL-KHARJ CITY RIYADH SAUDI ARABIA				الشركة الوطنية لنقل الكهرباء National Grid sa							
DRAWN BY RIZ		CHECKED BY KVR		DATE STARTED 24.01.2013		DATE COMPLETED _____													
00		13 04		FOR APPROVAL		OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		INDEX		PLANT NO. C421		DRAWING NUMBER CD-322919		SHEET NO. 492		REV. NO. 00	
REV. NO.		DATE		DESCRIPTION															

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

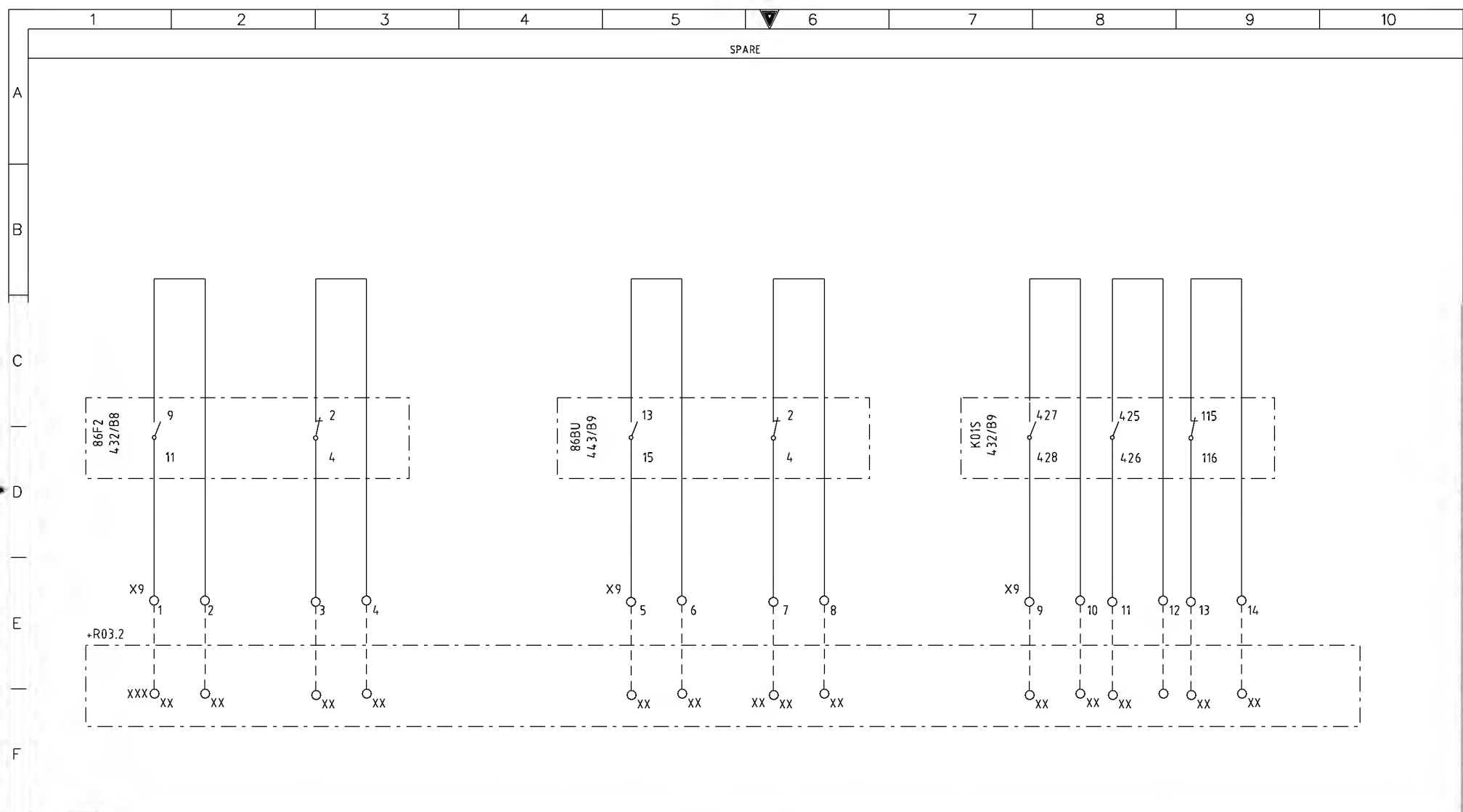


AS-BUILT BY _____ DATE _____			CONTRACT NO. I1131113/00		JOB ORDER NO. S-13656		CLOSING CIRCUIT		الشركة الوطنية لنقل الكهرباء	
			DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-2 +R03.2		National Grid sa	
			DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX PLANT NO. DRAWING NUMBER	
			OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		SHEET NO. REV. NO.	
FOR APPROVAL									493/494 00	
REV. NO.	DATE	DESCRIPTION								

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

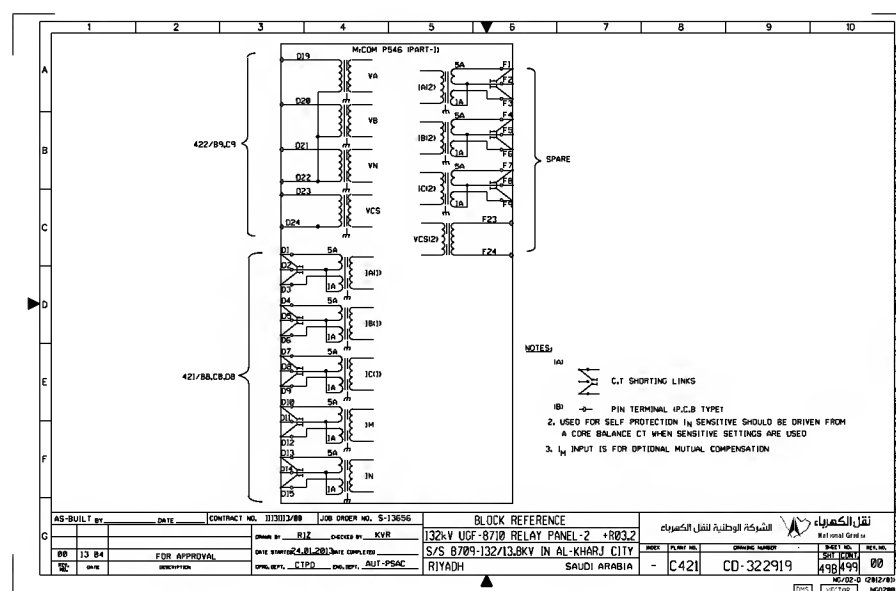


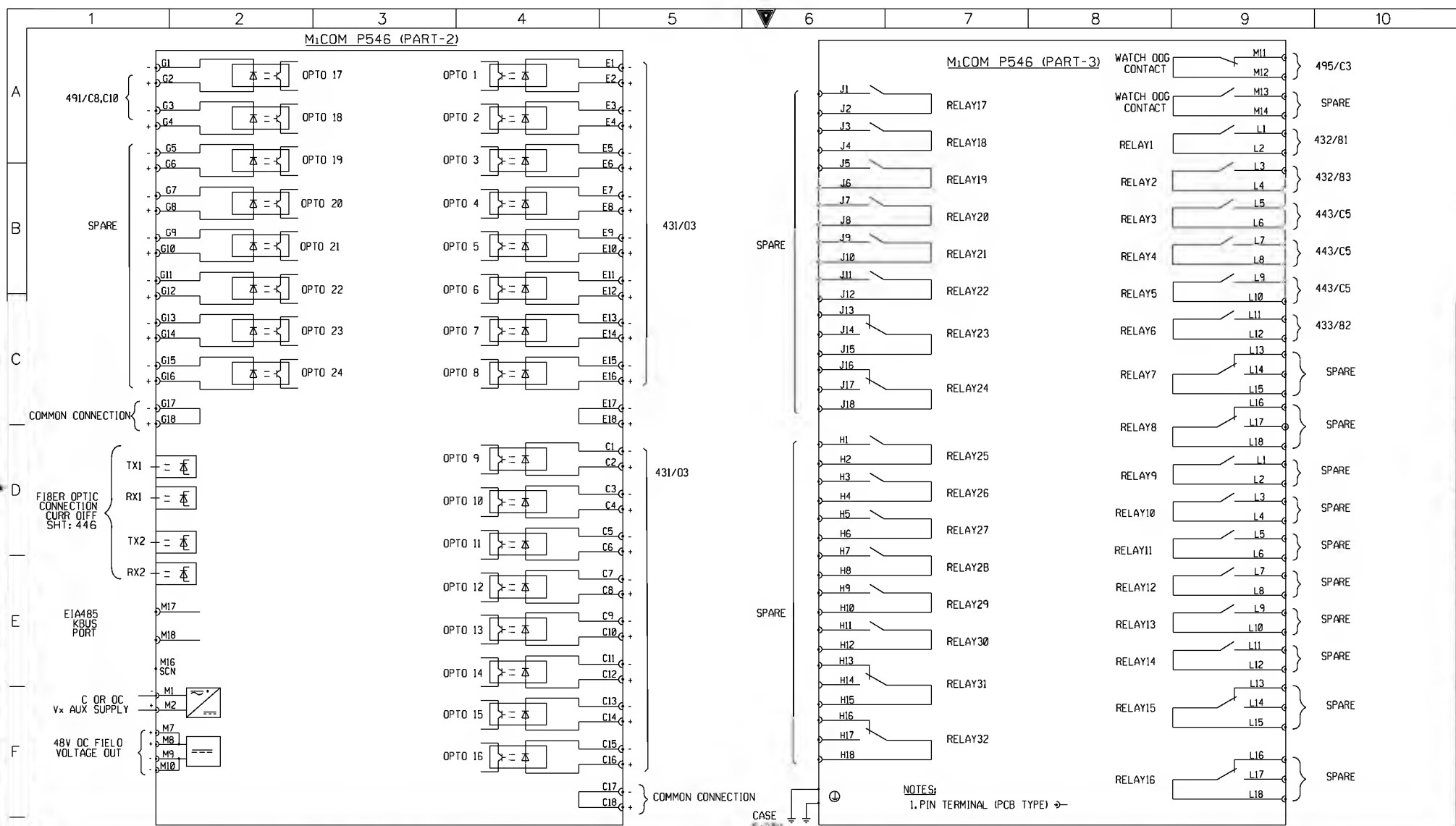
AS-BUILT BY _____ DATE _____		CONTRACT NO. 1113113/00	JOB ORDER NO. S-13656	COMMON ALARM CIRCUITS		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
		DRAWN BY RIZ	CHECKED BY KVR	132kV UGF-8710 RELAY PANEL-2 +R03.2		National Grid sa			
		DATE STARTED 24.01.2013	DATE COMPLETED _____	S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
		OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC	RIYADH SAUDI ARABIA		-	C421	CD-322919	494/495
REV. NO.	DATE	DESCRIPTION							
00	13 04	FOR APPROVAL							



+R03.2		AS-BUILT BY _____ DATE _____		CONTRACT NO. I113I113/00	JOB ORDER NO. S-13656	SPARE CONTACTS		نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid sa	
		DRAWN BY RIZ CHECKED BY KVR				132kV UGF-8710 RELAY PANEL-2 +R03.2			
		DATE STARTED 24.01.2013 DATE COMPLETED _____				S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO. - C421 CD-322919 495/498 00	
REV. NO.	DATE	DESCRIPTION		OPRG. DEPT.	ENG. DEPT.	SAUDI ARABIA		NG/D2-0 (2012/01) VECTOR NGD200	

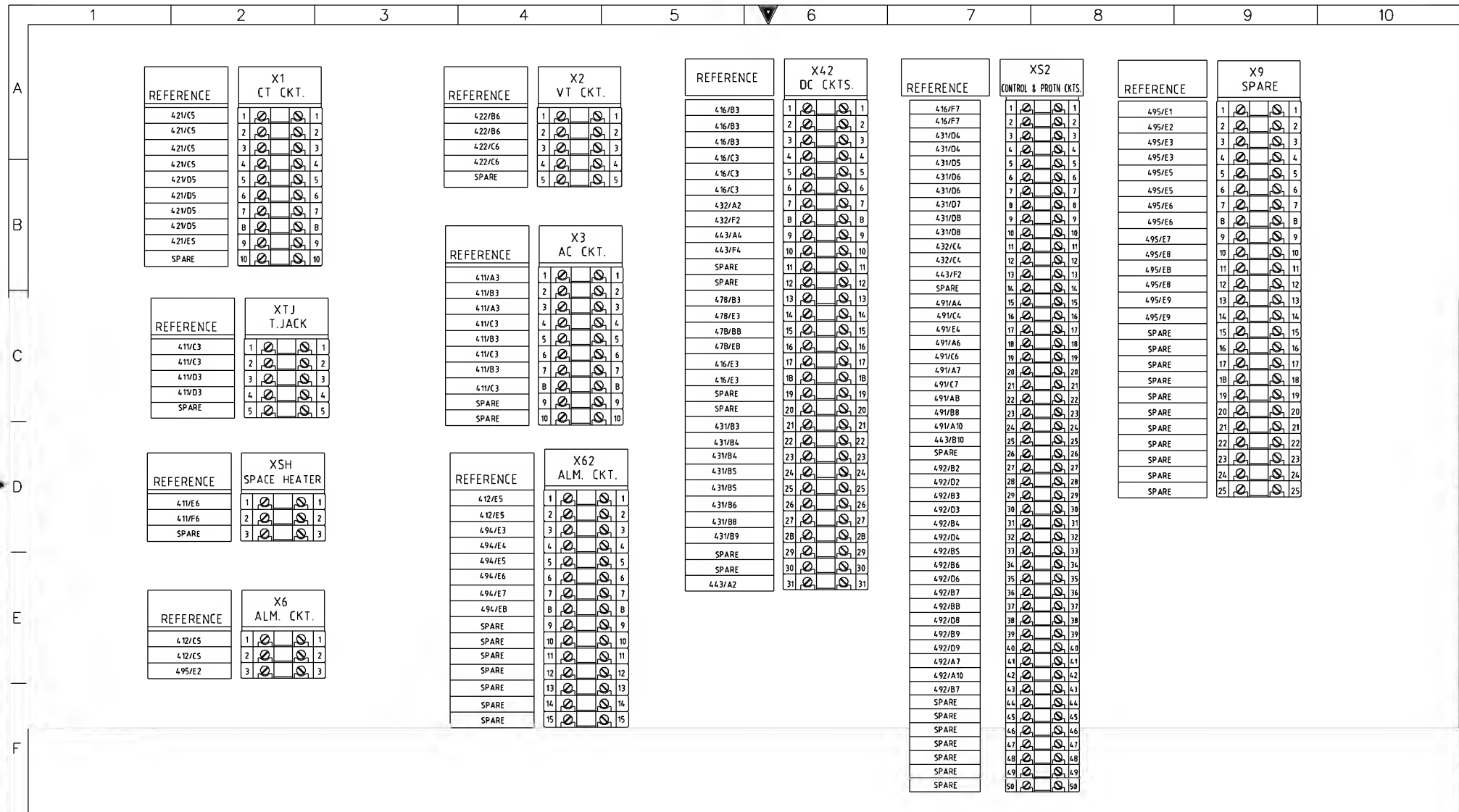
THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.






AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	CLOSING CIRCUIT		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
DRAWN BY RIZ CHECKED BY KVR		DATE STARTED 24.01.2013 DATE COMPLETED _____		132kV UGF-8710 RELAY PANEL-2 +R03.2		National Grid sa		SHEET NO. 499/501	
FOR APPROVAL		PRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		S/S 8709-132/13.8KV IN AL-KHARJ CITY		DRAWING NUMBER CD-322919		REV. NO. 00	
REV. NO. 00	DATE 13 04	DESCRIPTION		RIYADH SAUDI ARABIA		INDEX -	PLANT NO. C421	SHT (CONT.)	

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



AS-BUILT BY _____ DATE _____		CONTRACT NO. I1131113/00		JOB ORDER NO. S-13656		TERMINAL BLOCKS PANEL +R01.2		 <b>نقل الكهرباء</b> الشركة الوطنية لنقل الكهرباء National Grid SA	
DRAWN BY: RIZ		CHECKED BY: KVR		132kV UGF-8710 RELAY PANEL-2 +R03.2		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO. - C421 CD-322919 501 NIL 00	
DATE STARTED: 24.01.2013		DATE COMPLETED: _____		SAUDI ARABIA		SAUDI ARABIA		NG/D2-0 (2012/01) DMS VECTOR NGD200	
FOR APPROVAL		PRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC					

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.